CCD-TR57/TR67/TR87/TR413PK/TR414PK/ TR917/TR940/TR940PK

RMT-708

SERVICE MANUAL

US Model
CCD-TR67/TR87/TR917/TR940

Canadian Model
CCD-TR57/TR67/TR87/TR917/TR940

E Model
CCD-TR413PK/TR414PK/TR940PK

Self Diagnostics Supported model



Photo : CCD-TR940
: RMT-708

Handycam Vision™
Video 8 XR
video Hi8 XR

B MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
CCD-TR917/TR940/TR940PK : 4 rotary heads (SP/LP independent heads)
CCD-TR57/TR67/TR87/TR413PK/TR414PK : 2 Rotary heads
Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
NTSC color, EIA standards

Usable cassette
8mm video format cassette
CCD-TR57/TR67/TR87/TR413PK/TR414PK : standard 8
CCD-TR917/TR940/TR940PK : Hi8 or standard 8

Recording / Playback time
(using 120 min. cassette)
SP mode: 2 hours
LP mode: 4 hours

Fastforward/rewind time
(using 120 min. cassette)
Approx. 5 min.

Image device
CCD (Charge Coupled Device)

Viewfinder
Electronic viewfinder
Color 113,578 (521 x 218)

Lens
Combined power zoom lens
Filter diameter 1 7/16 in. (37 mm)
CCD-TR57 : 16 x (Optical), 32 x (Digital)
CCD-TR67/TR87 : 16 x (Optical), 64 x (Digital)
CCD-TR413PK/TR414PK : 16 x (Optical), 200 x (Digital)
CCD-TR917/TR940 : 18 x (Optical), 72 x (Digital)
CCD-TR940PK : 18 x (Optical), 220 x (Digital)

Focal distance
CCD-TR57/TR67/TR87/TR413PK/TR414PK : 3/16 - 2 5/8 in. (4.1 - 65.6 mm)
CCD-TR917/TR940/TR940PK : 3/16 - 8 in. (4.1 - 73.8 mm)
When converted to a 35 mm still camera
CCD-TR57/TR67/TR413PK : 1 9/16 - 24 7/8 in. (39.4 - 630 mm)
CCD-TR87/TR414PK : 1 7/8 - 29 3/4 in. (47.2 - 755 mm)
CCD-TR917/TR940/TR940PK : 1 7/8 - 33 1/2 in. (47.2 - 850 mm)

Color temperature
Auto

Minimum illumination*
CCD-TR57/TR67 : 0.4 lux (F 1.4)
CCD-TR413PK : 0.4 lux (F 1.4)(Visible minimum low light 0.2 lux)
CCD-TR87/TR414PK/TR917/TR940/TR940PK : 0.7 lux (F 1.4)
CCD-TR917/TR940/TR940PK : 0 lux (in NightShot mode)**

* Minimum illumination expresses the light level a camcorder requines to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.
**Object invisible for the dark can be shot with infrared lighting.

Illumination range
CCD-TR57/TR67/TR413PK : 0.4 lux to 100,000 lux
CCD-TR87/TR414PK/TR917/TR940/TR940PK : 0.7 lux to 100,000 lux

Recommended illumination
More than 100 lux

Input and output connectors

S video input/output(CCD-TR917/TR940/TR940PK only)
4-pin mini DIN
Luminance signal : 1 Vp-p, 75 ohms, unbalanced
Chrominance signal : 0.286 Vp-p, 75 ohms, unbalanced

Video input(CCD-TR917/TR940/TR940PK only)/output
Phono jack : 1 Vp-p, 75 ohms, unbalanced

Audio input(CCD-TR917/TR940/TR940PK only)/output
CCD-TR57/TR67/TR87/TR413PK/TR414PK : Monaural, Phone jack, 327 mV
CCD-TR917/TR940/TR940PK : Phono jacks (2: stereo L and R)
327 mV, (at output impedance 47 kilohms) impedance less than 2.2 kilohms

RFU DC OUT
Special minijack, DC 5V

Headphone jack(CCD-TR917/TR940/TR940PK only)
Stereo minijack (ø 3.5 mm)

LANC control jack
Stereo minijack (ø 2.5 mm)

MIC jack
Minijack, 0.388mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm)
CCD-TR57/TR67/TR87/TR413PK/TR414PK : Monaural type
CCD-TR917/TR940/TR940PK : Stereo type

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)

Average power consumption (when using the battery pack)
During camera recording
CCD-TR57/TR67/TR413PK : 2.4 W
CCD-TR87/TR414PK : 2.5 W
CCD-TR917/TR940/TR940PK : 2.6 W

Operating temperature
32°F to 104°F(0°C to 40°C)

Storage temperature
-4°F to +140°F(-20°C to +60°C)

Dimensions (Approx.)
4 1/4 x 4 1/4 x 7 5/8 in.
(107 x 107 x 193 mm)(w/h/d)

— Continued on next page —

8 VIDEO CAMERA RECORDER
CCD-TR57/TR67/TR87/TR413PK/TR414PK

Hi8 VIDEO CAMERA RECORDER
CCD-TR917/TR940/TR940PK

MICROFILM

SONY®

Mass (Approx.)
CCD-TR57 : 1 lb 11 oz (780 g)
CCD-TR67/TR87/TR413PK/TR414PK/TR917/TR940/TR940PK : 1 lb 11 oz (790 g)
excluding the battery pack, lithium battery, cassette and shoulder strap
CCD-TR57 : 2 lb (920 g)
CCD-TR67/TR87/TR413PK/TR414PK/TR917/TR940/TR940PK : 2 lb (930 g)
including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap

Microphone
CCD-TR57/TR67/TR87/TR413PK/TR414PK : Monaural type
CCD-TR917/TR940/TR940PK : Stereo type

Supplied accessories
See page 4.

AC power adaptor

Power requirements
100 -240 V AC, 50/60 Hz

Power consumption
23 W

Output voltage
DC OUT: 8.4 V, 1.5 A in operating mode

Operating temperature
32°F to 104°F(0°C to 40°C)

Storage temperature
-4°F to +140°F(-20°C to +60°C)

Dimensions (Approx.)
5 x 1 9/16 x 2 1/2 in. (125 x 39 x 62 mm)(w/h/d) excluding projecting parts

Mass (Approx.)
9.8 oz (280 g) excluding power cord

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.

3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

5. Check the B+ voltage to see it is at the values specified.

6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

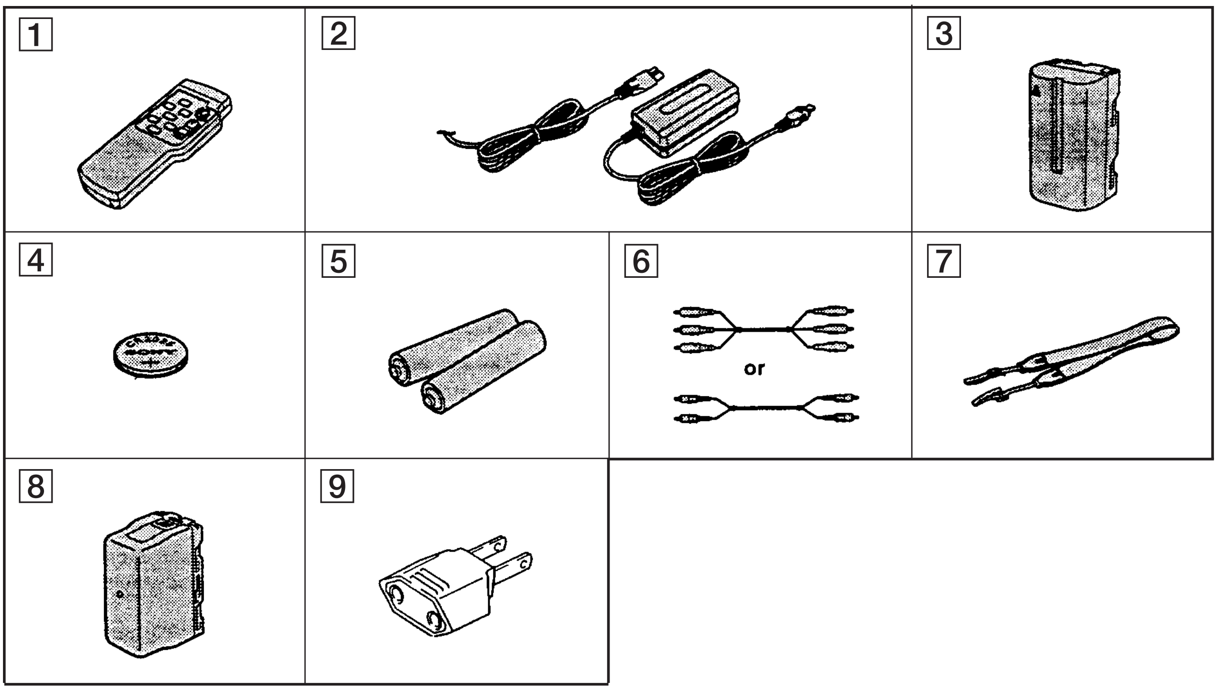
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Table for difference of function

Model		CCD-TR57	CCD-TR67	CCD-TR413PK	CCD-TR87	CCD-TR414PK	CCD-TR917	CCD-TR940	CCD-TR940PK	Remark
Destination		CND	US,CND	E	US,CND	E	US,CND	US,CND	E	
Color System		NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	
Classification		TYPE E	TYPE E	TYPE E	TYPE D	TYPE D	TYPE B	TYPE B	TYPE B	
Remote Commander		×	RMT-708	RMT-708	RMT-708	RMT-708	RMT-708	RMT-708	RMT-708	
Hi8		×	×	×	×	×	O	O	O	O : With S VIDEO terminal
Standard 8		O	O	O	O	O	×	×	×	
Lens	Optical	16X	16X	16X	16X	16X	18X	18X	18X	16X : LSV601A, 18X : LSV600A
	Digital	32X	64X	200X	64X	200X	72X	72X	220X	
CCD		510H	510H	510H	760H	760H	760H	760H	760H	
Night shot		×	×	×	×	×	O	O	O	O : LSV600A
Steady shot		×	×	×	O	O	O	O	O	O : with SE-65 board SE-451,452,IC451
5heads/3heads		3heads	3heads	3heads	3heads	3heads	5heads	5heads	5heads	
Audio system		Mono	Mono	Mono	Mono	Mono	Stereo	Stereo	Stereo	
TBC&DNR		×	×	×	×	×	O	O	O	O : with VC-195 board IC204
VTR REC		×	×	×	×	×	O	O	O	O : with FK-8500 block S005,007
Laser Link		×	×	×	O	O	O	O	O	O : with VC-195 board IC751
Manual Focus		×	×	×	×	×	O	O	O	O : with MF-8500
Video light		×	O	O	O	O	O	O	O	O : with VL-16 board
Display indicator backlight		×	×	×	×	×	O	O	O	O : with CF-49 board Q003,005

Supplied accessories



1 **Wireless Remote Commander (1)**
Except CCD-TR57

2 **AC-L10A/L10B/L10C AC power adaptor**

3 **NP-F330 Battery pack (1)**

4 **CR2025 Lithium Battery (1)**
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander (2)**

6 **A / V connecting cable (1)**
Stereo : CCD-TR917/TR940/TR940PK
Monaural : Except CCD-TR917/TR940/TR940PK

7 **Shoulder strap (1)**

8 **Battery case (1)**
CCD-TR67/TR87/TR940

9 **2 pin conversion adaptor (1)**
CCD-TR413PK/TR414PK/TR940PK

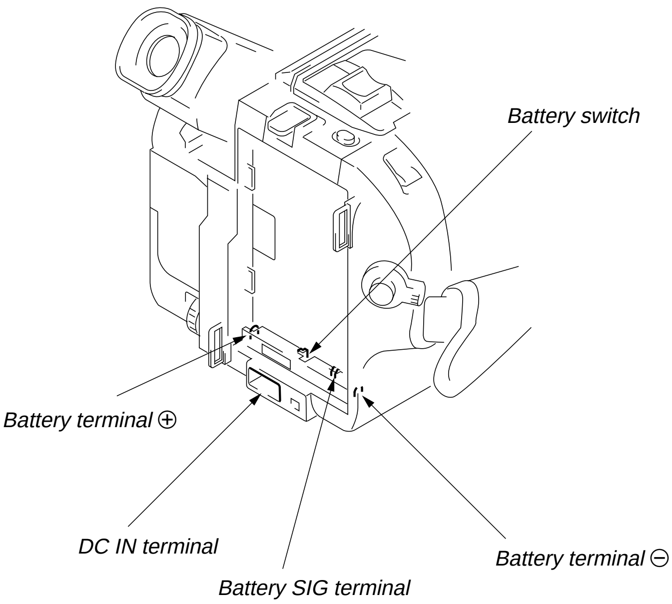
SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following two methods are available to prevent this. Take note of which to use during repairs.

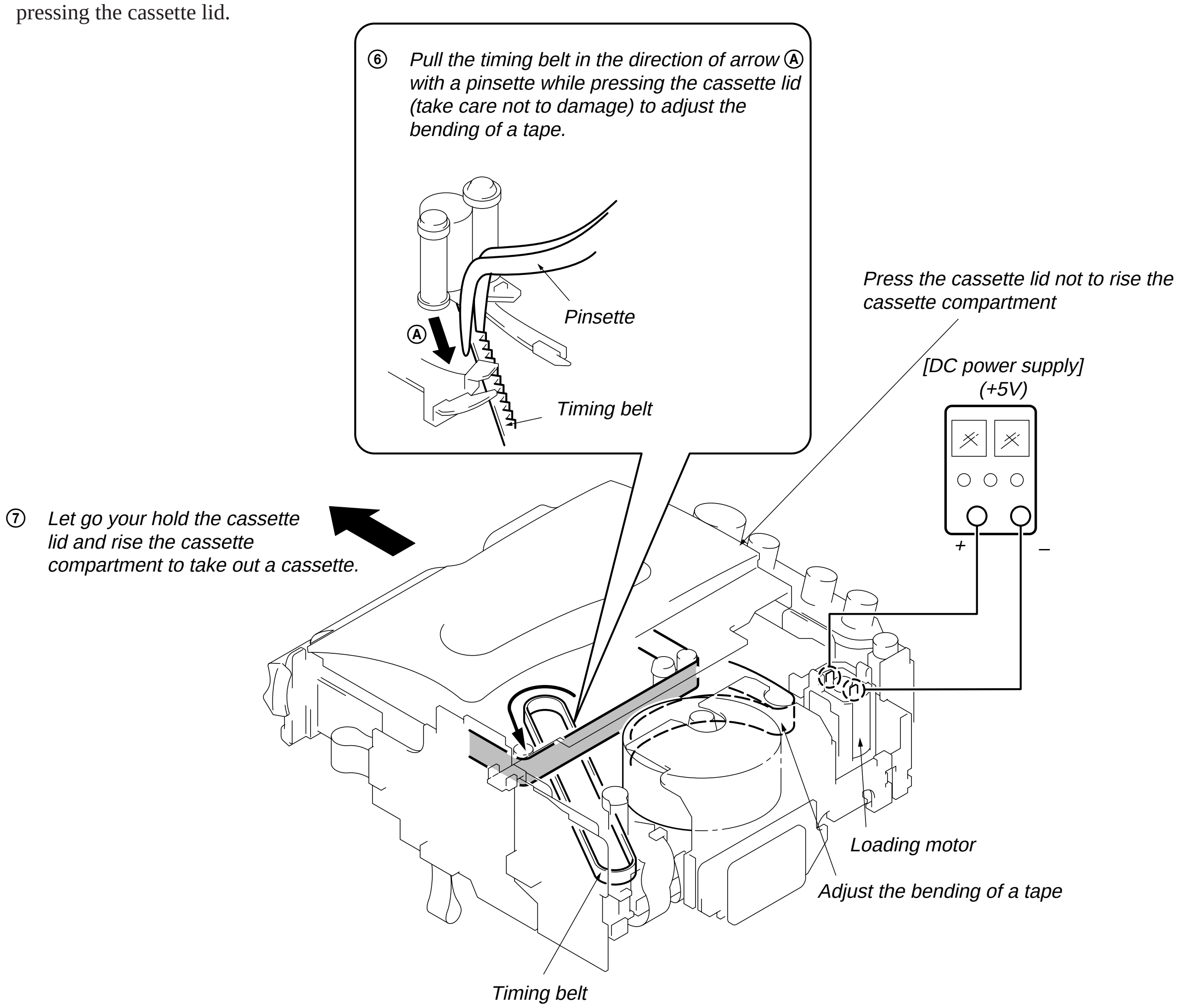
Method 1.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the “ADJ” side.

Method 2.
Use the DC IN terminal. (Use the AC power adaptor.)



2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-1. to remove the front panel block.
② Refer to 2-2. to remove the cabinet (R) block.
③ Refer to 2-6. to remove the battery panel block.
④ Refer to 2-8. to remove the cabinet (L) block.
⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid.



SELF-DIAGNOSIS FUNCTION

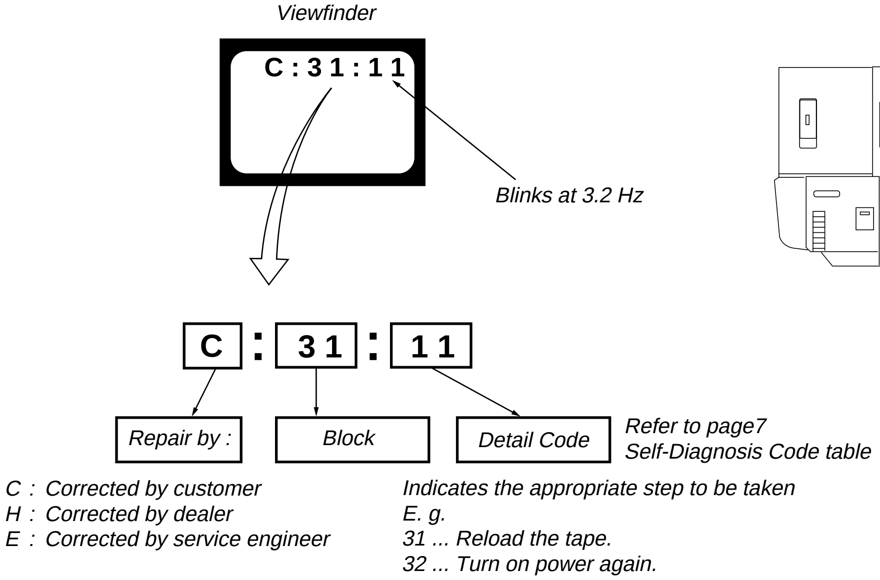
1. Self-diagnosis Function

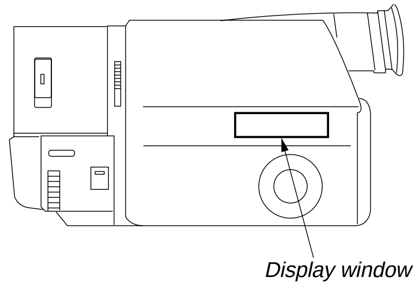
When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis display

When problems occur while the unit is operating, the counter of the viewfinder shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.



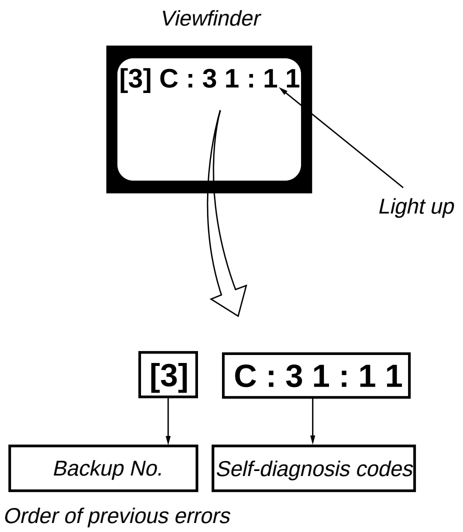


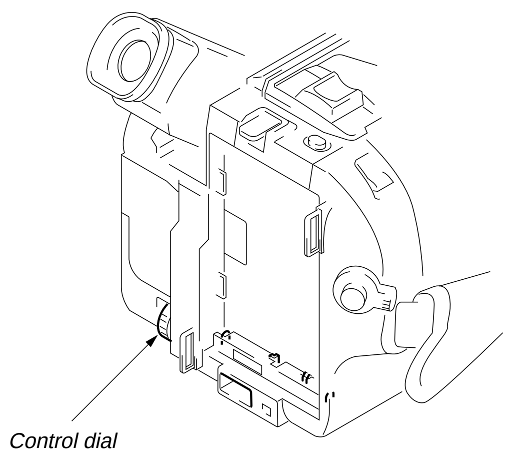
3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the "STOP" key, set the switch from OFF to "VTR or PLAYER", and continue pressing the "STOP" key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.





3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time	[4] : Occurred fourth time
[2] : Occurred second time	[5] : Occurred fifth time
[3] : Occurred third time	[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	2 3	0 0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 2	T reel fault	Load the tape again, and perform operations from the beginning.
C	3 1	2 3	S reel fault	Load the tape again, and perform operations from the beginning.
C	3 1	3 0	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	3 1	3 1	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning.
C	3 1	4 0	FG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3 1	4 1	PG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3 1	4 2	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3 1	4 3	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3 1	4 4	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3 2	1 0	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	1 1	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 2	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 3	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 0	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 1	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 1	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 3	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 4	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲ of CN551 of VC-195 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC552 of VC-195 board) when the focusing is not performed. Note : Use the remote commander RM-95 only for the model without the focus dial.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉑ of CN551 of VC-195 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC552 of VC195 board) when zooming is not performed.
E	6 2	0 0	Handshake correction function does not work well.(With pitch angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE451 of SE-65 board) peripheral circuits.
E	6 2	0 1	Handshake correction function does not work well.(With yaw angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE452 of SE-65 board) peripheral circuits.

TABLE OF CONTENTS

SERVICE NOTE

Self-Diagnosis Function

1. GENERAL

2. DISASSEMBLY

3. BLOCK DIAGRAMS

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

5. ADJUSTMENTS

6. REPAIR PARTS LIST

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TR57/TR67/TR87/TR917/TR940.

Before you begin

Using this manual

The instructions in this manual are for the six models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TR917/TR940 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR917/TR940 only."
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
You can hear the beep sound to confirm your operation.

Types of differences

CCD-	TR57	TR67	TR87	TR917/TR940
System	8	8	8	Hi8
VIDEO/AUDIO IN*	—	—	—	●
S VIDEO	—	—	—	●
Optical zoom	16x	16x	16x	18x
Digital zoom	32x	64x	64x	72x
NightShot	—	—	—	●
Steady Shot	—	—	●	●
Remote sensor	—	●	●	●
LASER LINK	—	—	●	●
Fader function	—	—	—	●
Stripe	—	—	—	●
Manual focus	—	—	—	●
Exposure	—	—	—	●
Audio	monaural	monaural	monaural	stereo
Built-in light	—	●	●	●

* The models without VIDEO/AUDIO IN have CAMERA, OFF and PLAYER mode on the POWER switch.

Using this manual

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

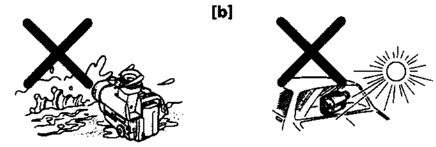
Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

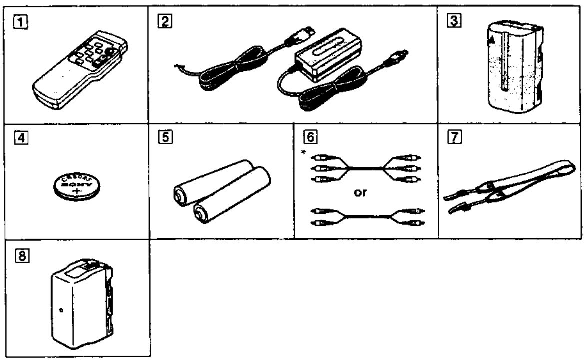
- **The LCD screen and/or the color viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen and/or in the viewfinder. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.**
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight **[b]**.

[a] [b]



Checking supplied accessories

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p. 76)
CCD-TR67/TR87/TR917/TR940 only

2 **AC-L10A/L10B/L10C AC power adaptor** (1), **Power cord** (1) (p. 8, 23)

3 **NP-F330 Battery pack** (1) (p. 7, 23)

4 **CR2025 Lithium Battery** (1) (p. 54)
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander** (2) (p. 76)
CCD-TR67/TR87/TR917/TR940 only

6 **A/V connecting cable** (1) (p. 19)
*for stereo model

7 **Shoulder strap** (1) (p. 77)

8 **Battery case** (1) (p. 24)
CCD-TR67/TR87/TR940 only

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

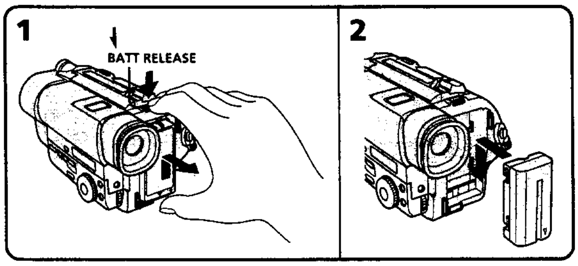
Getting started

Installing and charging the battery pack

Before using your camcorder, you first need to install and charge the battery pack.

Installing the battery pack

(1) While pressing BATT RELEASE, slide the lower battery terminal cover in the direction of the arrow.
(2) Install the battery pack in the direction of the ▼ mark on the battery pack. Slide the battery pack down until it catches on the battery release lever and clicks. Attach the battery pack to the camcorder securely.



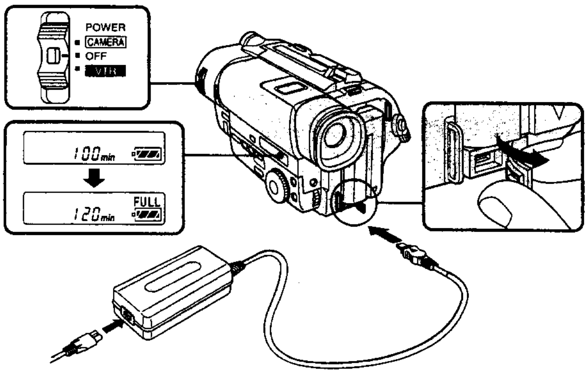
Note on the battery pack
Do not carry the camcorder by grasping the battery pack.

Charging the battery pack

Charge the battery pack on a flat surface without vibration. The battery pack is charged a little in the factory.

(1) Open the DC IN jack cover and connect the supplied AC power adaptor to the DC IN jack with the plug's ▲ mark up.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.
(4) Slide the POWER switch to OFF. Remaining battery time is indicated by the minutes on the display window. Charging begins.

When the remaining battery indicator becomes ▀▀, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack attached for about 1 hour after normal charge is completed until FULL appears in the display window. Unplug the AC power adaptor from the camcorder. You can also use the battery pack before it is completely charged.
Before using the camcorder with the battery pack, unplug the AC power adaptor from the DC IN jack of the camcorder.



Notes
- "--- min" appears on the display until the camcorder calculates remaining battery time.
- Remaining battery time indication in the display window roughly indicates the recording time. Use it as a guide. It may differ from the actual recording time.

Charging time

Battery pack	NP-F330 (supplied)	NP-F530 NP-F550	NP-F730 NP-F730H/F750	NP-F930 NP-F950
Charging time* (min.)	150 (90)	210 (150)	300 (240)	390 (330)

The time required for a normal charge is indicated in parentheses.
* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery life

CCD-TR57/TR67

Battery pack	NP-F330 (supplied)	NP-F530	NP-F550	NP-F730	NP-F730H /F750	NP-F930	NP-F950
Continuous recording time*	135 (120)	235 (210)	270 (240)	475 (425)	550 (500)	745 (670)	850 (760)
Typical recording time**	70 (60)	120 (110)	140 (125)	250 (225)	290 (265)	390 (355)	450 (400)

CCD-TR87

Battery pack	NP-F330 (supplied)	NP-F530	NP-F550	NP-F730	NP-F730H /F750	NP-F930	NP-F950
Continuous recording time*	130 (115)	225 (200)	260 (230)	450 (405)	530 (480)	710 (640)	815 (730)
Typical recording time**	65 (60)	115 (105)	135 (120)	235 (210)	280 (250)	375 (335)	430 (385)

CCD-TR917/TR940

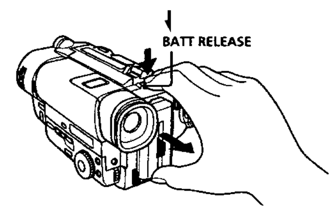
Battery pack	NP-F330 (supplied)	NP-F530	NP-F550	NP-F730	NP-F730H /F750	NP-F930	NP-F950
Continuous recording time*	125 (110)	215 (190)	250 (220)	430 (385)	510 (460)	680 (610)	780 (700)
Typical recording time**	65 (55)	110 (100)	130 (115)	225 (200)	270 (240)	360 (320)	410 (370)

Numbers in parentheses indicate the time when you use a normally charged battery.
Battery life will be shorter if you use the camcorder in a cold environment.
* Approximate continuous recording time at 77°F (25°C).
** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Note on remaining battery time indication during recording
Remaining battery time is displayed in the viewfinder. However, the indication may not be displayed properly, depending on using conditions and circumstances.

To remove the battery pack

While pressing BATT RELEASE, slide the battery pack in the direction of the arrow.

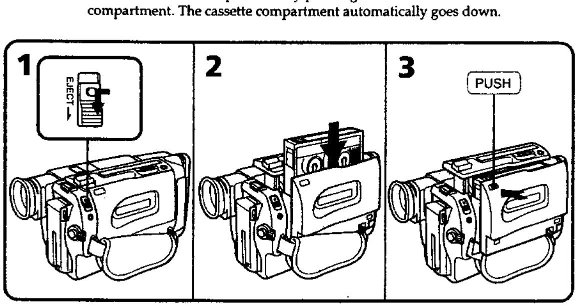


You can look at the demonstration of the functions available with this camcorder (p. 28).

Inserting a cassette

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette Hi8 (CCD-TR917/TR940 only).

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.
(2) Insert a cassette with the window facing out.
(3) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.

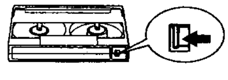


To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the ⊡ and ≜ indicators flash, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

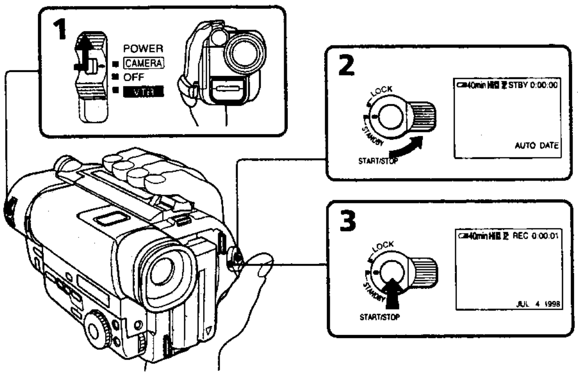


Basic operations

Camera recording

Make sure that the power source is installed and a cassette is inserted and that the START/STOP MODE switch is set to ♙. Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording (p. 57). The date is automatically recorded for 10 seconds after you start recording **(AUTO DATE feature)**. This feature works only once a day.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The camera recording/battery lamp located on the front of the camcorder also lights up.



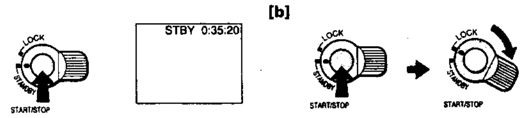
To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder **(Standby mode)**.

To finish recording [b]

Press START/STOP again. Turn STANDBY down to LOCK and set the POWER switch to OFF. Then, eject the cassette.

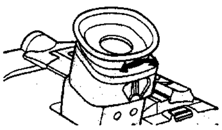
[a] [b]



Note
For getting remaining battery time indicated correctly, leave the battery pack installed after use. Wear of the battery pack which is installed with the camcorder is a little. As an exception, be sure to remove the battery pack from the model having the built-in light after recording (CCD-TR67/TR87/TR917/TR940 only).

To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.



Note on the lighting aperture
If direct sunlight enters the lighting aperture, the picture in the viewfinder appears brighter. When this happens, colors in the viewfinder may change.

Note on Standby mode
If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically for saving battery power as well as for preventing the battery and tape from wearing down. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Note on recording
When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

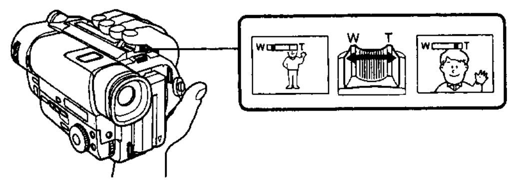
Notes on the tape counter
- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound
The beep sounds when you operate the camcorder. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature
The clock is set to East Coast Standard Time at the factory. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)

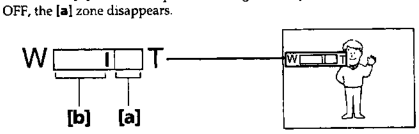


Zooming speed (Variable speed zooming)

Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 5/8 feet (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

Notes on digital zoom
- More than 16x (CCD-TR57/TR67/TR87) or 18x (CCD-TR917/TR940) zoom is performed digitally, and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side **[a]** of the power zoom indicator shows the digital zooming zone, and the left side **[b]** shows the optical zooming zone. If you set the D ZOOM function to OFF, the **[a]** zone disappears.



Selecting the START/STOP mode

Your camcorder has three modes. These modes enable you to take a series of quick shots resulting in a lively video.

(1) Set START/STOP MODE to the desired mode.

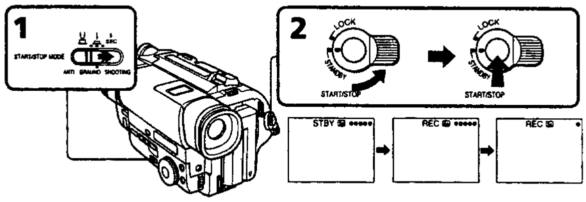
 : Recording starts when you press START/STOP, and stops when you press it again (normal mode).

ANTI GROUND SHOOTING : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.

5SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(2) Turn STANDBY up to STANDBY and press START/STOP. Recording starts.

If you selected 5SEC, the tape counter disappears and five dots appear. The dots disappear at a rate of one per second as illustrated below.



To extend the recording time in 5SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Note on START/STOP mode

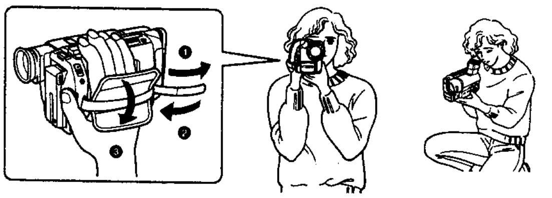
You cannot use FADER in 5SEC or mode (CCD-TR917/TR940 only).

Hints for better shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure to not touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting angle. Lift the viewfinder up for recording from a low position **[b]**.

[a] [b]



Place the camcorder on a flat surface or use a tripod

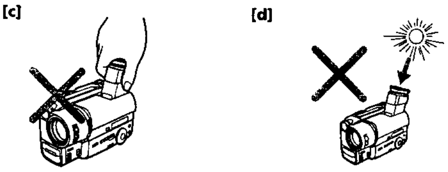
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.

When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Cautions on the viewfinder

- Do not pick up the camcorder by the viewfinder **[c]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be damaged. Be careful when placing the camcorder under sunlight or by a window **[d]**.

[c] [d]



Checking the recorded picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

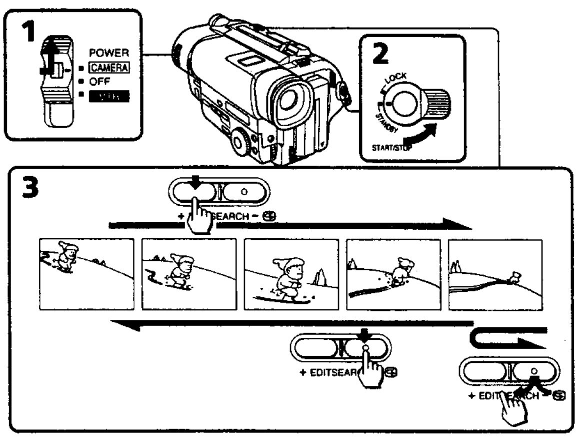
(1) While pressing the small green button on the POWER switch, set it to CAMERA.

(2) Turn STANDBY up to STANDBY.

(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back **(Rec Review)**.

You can monitor the sound from headphones (CCD-TR917/TR940 only).

Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.



To stop playback

Release EDITSEARCH.

To begin re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Connections for playback

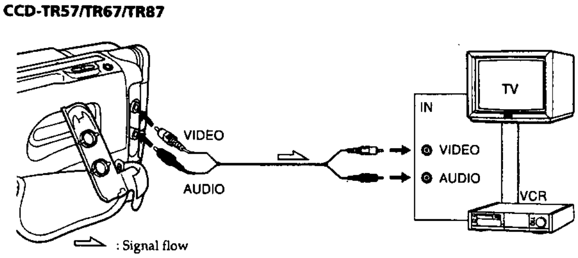
Connect the camcorder to your TV or VCR to watch the playback picture on the TV screen. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

Connecting directly to a TV/VCR with Video/Audio input jacks

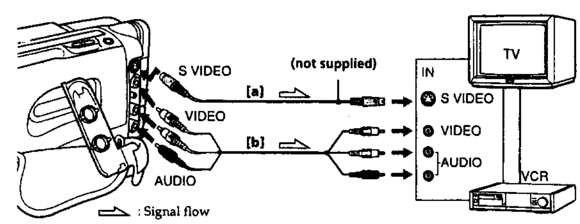
When connecting the A/V connecting cable, make sure you connect the plug to jacks of the same color.

Open the jack cover. With using the supplied A/V connecting cable, connect the camcorder to the LINE IN inputs on the TV or VCR connected to the TV. Set the TV/VCR selector on the TV to VCR. When connecting to the VCR, set the input selector on the VCR to LINE.

CCD-TR57/TR67/TR87



CCD-TR917/TR940



–CCD-TR917/TR940 only

If your TV or VCR has an S video jack, connect using the S video connecting cable (not supplied) **[a]** to obtain a high quality picture. If you are going to connect the camcorder using the S video connecting cable (not supplied) **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

If your TV or VCR is a monaural type
–CCD-TR917/TR940 only
Connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural even in stereo model.

To connect to a TV or VCR without Video/Audio input jacks
Use an RFU-95UC RFU adaptor (not supplied).

Using the AV cordless IR receiver

–CCD-TR87/TR917/TR940 only
Once you connect the AV cordless IR receiver (not supplied) having the LASER LINK mark to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instruction of the AV cordless IR receiver.
LASER LINK is a system which transmits and receives a picture and sound between video equipment having the mark by using infrared rays.
LASER LINK is a trademark of Sony Corporation.

To play back on a TV
(1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
(2) Set the POWER switch on the camcorder to VTR/PLAYER.
(3) Turn the TV on and set the TV/VCR selector on the TV to VCR.
(4) Press LASER LINK. The lamp of the LASER LINK button lights up.
(5) Press ► on the camcorder to start playback.
(6) Point the LASER LINK emitter at the AV cordless IR receiver.

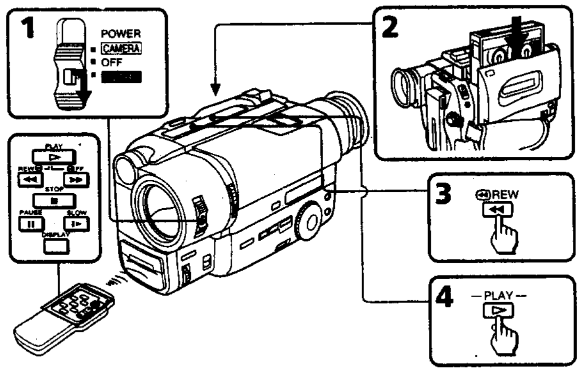
To cancel the LASER LINK function
Press LASER LINK.

If you use a Sony TV
- You can turn on the TV automatically when you press the LASER LINK or ► button. To do so, set the AUTO TV ON to ON in the menu system and turn the TV's main switch on, then do either of the following;
  - Point the LASER LINK emitter towards the TV's remote sensor and press LASER LINK.
  - Turn on the LASER LINK button and press ►.
- You can switch the video input of the TV automatically to the one which the AV cordless IR receiver is connected. To do so, set the AUTO TV ON to ON and the TV INPUT to the same video input (1,2,3) in the menu system. With some models, However the picture and sound may be disconnected momentarily when the video input is switched.
- The above feature may not work with some TV models.

Note
When LASER LINK is activated (the LASER LINK button is lit), the camcorder consumes power. Press and turn off the LASER LINK button when it is not needed.

Playing back a tape

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR.
(1) While pressing the small green button on the POWER switch, set it to VTR (CCD-TR917/TR940) or PLAYER (CCD-TR57/TR67/TR87). The video control buttons light up (CCD-TR917/TR940 only).
(2) Insert the recorded tape with the window facing out.
(3) Press ◄◄ to rewind the tape.
(4) Press ► to start playback.



To stop playback, press ■.
To rewind the tape, press ◄◄.
To fast-forward the tape rapidly, press ►►.

Using the remote commander
–CCD-TR67/TR87/TR917/TR940 only
You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

To display the viewfinder screen indicators on the TV
Press DISPLAY on the remote Commander. To erase the indicators, press DISPLAY again.

Using headphones
Connect headphones (not supplied) to the Ω jack (CCD-TR917/TR940 only).

Note on the lens cover
The lens cover does not open when the POWER switch is set to VTR/PLAYER. Do not open the lens cover manually. It may cause malfunction.

Various playback modes

You can enjoy pictures in the viewfinder during still, slow and picture search.

To view a still picture (playback pause)
Press ❚❚ during playback. To resume playback, press ❚❚ or ►.

To locate a scene (picture search)
Keep pressing ◄◄ or ►► during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)
Keep pressing ◄◄ while rewinding or ►► while advancing the tape. To resume normal playback, press ►.

To view the picture at 1/5 speed (slow playback)
– CCD-TR67/TR87/TR917/TR940 only
Press ❙► on the Remote Commander during playback. To resume normal playback, press ►. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To select the playback sound
– CCD-TR917/TR940 only
Change the "HiFi SOUND" mode setting in the menu system.

Notes on playback
- Noise may appear when you use the still/slow/picture search function to play back the tape recorded in LP mode.
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.
- You can play back the tapes recorded in the Hi8 video system on the standard 8 mm camcorder (CCD-TR57/TR67/TR87 only).

Using alternative power sources

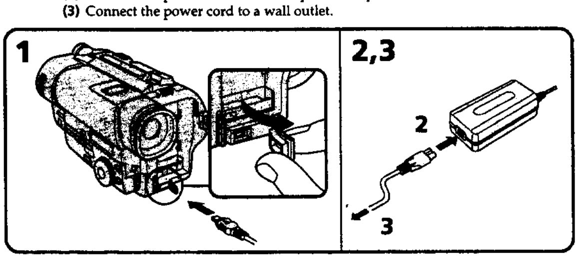
You can choose any of the following power sources for your camcorder: battery pack, house current, alkaline batteries (CCD-TR67/TR87/TR940 only) and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	Battery pack NP-F330 (supplied), NP-F530, NP-F550, NP-F730, NP-F730H, NP-F750, NP-F930, NP-F950
	Size AA (LR6) Alkaline battery	Supplied battery case (CCD-TR67/TR87/TR940 only)
In the car	12 V or 24 V car battery	Sony car battery charger DC-V515A

Notes on power sources
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape.
- The DC IN jack has priority over the battery pack for supplying the power. Even if you unplug the power cord from the wall outlet, the battery pack cannot supply the power to the camcorder as long as the AC power adaptor is connected to the DC IN jack.

Using the house current

(1) Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on the camcorder.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.



WARNING
The power cord must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

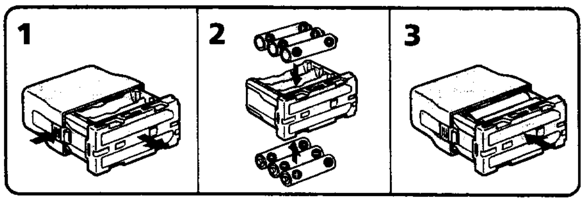
Note
Keep the AC power adaptor away from the camcorder if the picture is disturbed.

Using alkaline batteries

– CCD-TR67/TR87/TR940 only

Use the battery case (supplied) and six size AA (LR6) Sony Alkaline batteries (not supplied).

(1) Remove the battery holder from the battery case.
(2) Insert six new alkaline batteries into the battery holder, following the marking on the holder to be sure the batteries are installed in the correct direction.
(3) Insert the battery holder with the alkaline batteries.
(4) Insert the battery case with the alkaline batteries to the battery mounting surface of the camcorder in the same way as the battery pack.



Battery life

Using alkaline batteries at 77°F (25°C).

CCD-	TR67	TR87	TR940
Continuous recording time	330 min.	305 min.	285 min.
Typical recording time	170 min.	160 min.	150 min.

PRECAUTION

When the battery case is attached to the camcorder, do not connect the AC power adaptor.

Notes

- You may not use the battery case in cold environment.
- The battery life may be shorter depending on the using environment.
- The above battery lives are estimates. The battery life may be shorter depending on the storage condition of the battery before being purchased and temperature.

To remove the battery case

The battery case is removed in the same way as the battery pack.
When you replace the batteries, be sure to remove the battery case from the camcorder to prevent malfunction.
Remove the battery case after using it.

Using a car battery

Use Sony DC-V515A car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V). Refer to the operating instructions of your car battery charger.

To remove the car battery charger

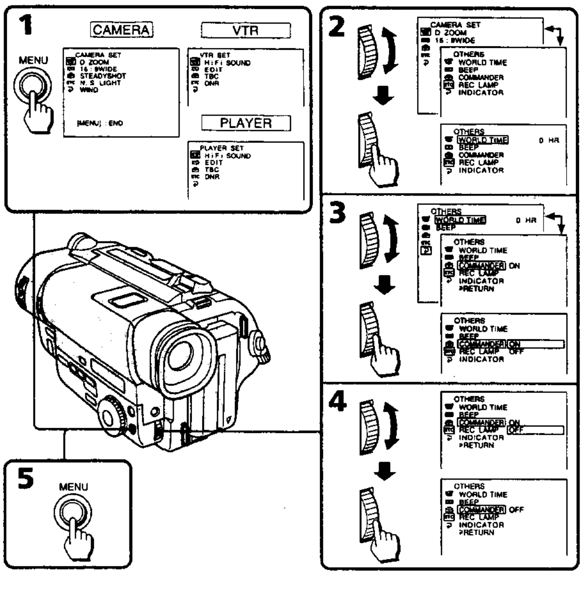
The car battery charger is removed in the same way as the battery pack.

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Changing the mode settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu.
(2) Turn the control dial to select the desired icon in the left side of the menu, then press the dial.
(3) Turn the control dial to select the desired item, then press the dial.
(4) Turn the control dial to select the desired mode, and press the dial. If you want to change the other modes, repeat steps 3 and 4. If you want to change the other items, select ⮐ RETURN and press the dial, then repeat steps from 2 to 4.
(5) Press MENU or select ⮐ icon to erase the menu display.



Note on the menu display

Depending on the model of your camcorder, the menu display may be different from that in this illustration.

Note on changing the mode setting

Menu items differ depending on the setting of the POWER switch to VTR/PLAYER or CAMERA.

Selecting the mode setting of each item

Items for both CAMERA and VTR/PLAYER modes

REC MODE* <SP/LP>

- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

When a tape recorded on this camcorder in LP mode is played back on other types of 8mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.
In PLAYER mode, this item is not displayed in the menu (CCD-TR57/TR67/TR87 only).

Ò REMAIN* <AUTO/ON>

- Select AUTO when you want to display the remaining tape bar
  - for about 8 seconds after the camcorder turns on and calculates the remainder of the tape.
  - for about 8 seconds after a cassette is inserted and the camcorder calculates the remainder of the tape.
  - for the period of tape rewinding, forwarding or picture search in VTR/PLAYER mode.
  - for about 8 seconds after ► is pressed in VTR/PLAYER mode.
  - for about 8 seconds after DISPLAY on the remote commander is turned on (CCD-TR67/TR87/TR917/TR940 only).
- Select ON to always display the remaining tape indicator.

AUTO TV ON* <ON/OFF> (CCD-TR87/TR917/TR940 only)

You can use this feature only with Sony TVs.

- Select ON to turn on the TV automatically when using the LASER LINK function.
- Select OFF not to turn on the TV.

TV INPUT* <VIDEO1/VIDEO2/VIDEO3/OFF> (CCD-TR87/TR917/TR940 only)

Select 1 or 2 or 3 of the video input on the TV which the IR receiver (not supplied) is connected to when using the LASER LINK function.

LTR SIZE* <NORMAL/2x>

- Normally select NORMAL.
- Select 2x to display selected menu item by twice size of normal.

BEEP* <ON/OFF>

- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

COMMANDER <ON/OFF> (CCD-TR67/TR87/TR917/TR940 only)

- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

INDICATOR* <BL ON/BL OFF> (CCD-TR917/TR940 only)

- Select BL ON to light up the display window.
- Select BL OFF to turn off the back light of display window.

When you use the AC power adaptor as a power source, this item is not displayed in the menu.

Items for CAMERA mode only

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camcorder goes back to 16x (CCD-TR57/TR67/TR87) or 18x (CCD-TR917/TR940) zoom.

16:9WIDE* <OFF/CINEMA/16:9FULL>
- Normally select OFF.
- Select CINEMA to record in CINEMA mode.
- Select 16:9FULL to record in 16:9FULL mode.

STEADYSHOT* <ON/OFF> (CCD-TR87/TR917/TR940 only)
- Normally select ON.
- Select OFF to release the SteadyShot function.

N.S.LIGHT* <ON/OFF> (CCD-TR917/TR940 only)
- Normally select ON.
- Select OFF to not use the NightShot Light function.

WIND <ON/OFF> (CCD-TR917/TR940 only)
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

ORC TO SET*
Select this item to automatically adjust the recording condition to get the best possible recording.

CLOCK SET*
Reset the date or time.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

DEMO MODE* <ON/OFF>
- Select ON to make the demonstration appear.
- Select OFF to deactivate the demonstration mode.

Notes on DEMO MODE
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette.
  Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.
- When NIGHTSHOT is set to ON, "NIGHTSHOT" appears in the viewfinder and the demonstration does not start (CCD-TR917/TR940 only).

To look at the demonstration at once
Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin.
When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

WORLD TIME*
Select this item to set the clock by a time difference.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

Items for VTR/PLAYER mode only

HiFi SOUND <STEREO/1/2> (CCD-TR917/TR940 only)
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

TBC* <ON/OFF> (CCD-TR917/TR940 only)
- Normally select ON, to correct for jitter.
- Select OFF to not correct for jitter. The picture may not be steady when played back.

Note on TBC setting
Set TBC to OFF when:
- Playing back a tape you have dubbed over.
- Playing back a tape on which you recorded the signal of a TV game or similar machine.
- The playback picture fluctuates.

DNR* <ON/OFF> (CCD-TR917/TR940 only)
- Normally select ON to reduce picture noise.
- Select OFF if the picture has a lot of movement, causing a conspicuous afterimage.

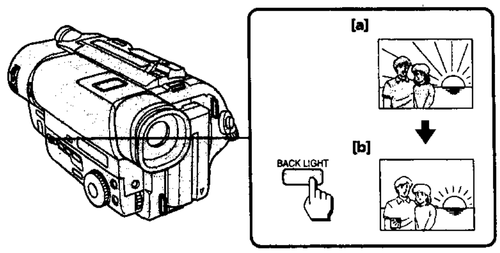
The following settings work only during playback
EDIT, HiFi SOUND, TBC, and DNR.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The indicator appears in the viewfinder.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting
Be sure to release this adjustment condition by pressing BACK LIGHT again. The indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

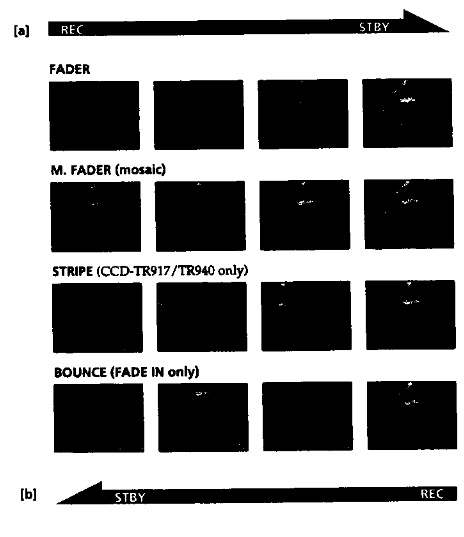
To make a fine adjustment
You can adjust the exposure manually. However, when you adjust the exposure manually, BACK LIGHT does not operate.

Using the FADER function

– CCD-TR917/TR940 only

Selecting the fader function

You can fade in or out to give your recording a professional appearance.
When the picture fades in, the sound gradually increases. When the picture fades out, the sound gradually decreases.



MONOTONE
When fading in, the picture gradually changes from black and white to color.
When fading out, the picture gradually changes from color to black and white.

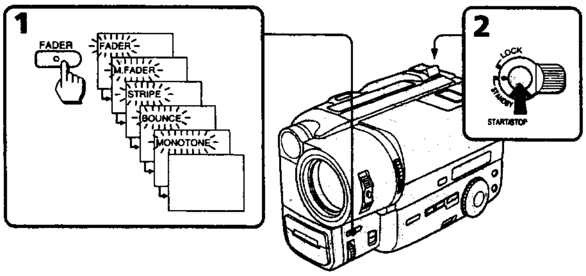
Using the fader function

When fading in [a]

(1) While the camcorder is in Standby mode, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.
The fading mode selected last is indicated first of all.



Note on the bounce function
When you use the following functions, "BOUNCE" indicator does not appear.
- Wide mode
- Functions using the PICTURE EFECT button
- Functions using the PROGRAM AE dial
- D ZOOM is set to ON in the menu system

To cancel the fader function
Before pressing START/STOP, press FADER until the indicator disappears.

When the date or time indicator and title are displayed
The date or time indicator and title do not fade in or fade out.

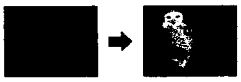
When the START/STOP MODE switch is set to 5SEC or ⊥
You cannot use the fader function.

Note on the fader function
While uing the bounce function, you cannot use the following functions.
- Exposure
- Focus
- Zoom

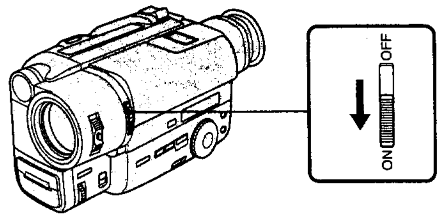
Shooting in the dark (NightShot)

– CCD-TR917/TR940 only

The NightShot function enables you to shoot a subject in a dark place. You can achieve a satisfactory recording of the ecology of nocturnal animals for observation with this function.
This function may record picture nearly in monochrome.



(1) While the camcorder is in Standby mode, slide NIGHTSHOT to ON.
(2) Press START/STOP to start recording.
◉ and "NIGHTSHOT" indicators flash.



To cancel the NightShot function
Slide NIGHTSHOT to OFF.

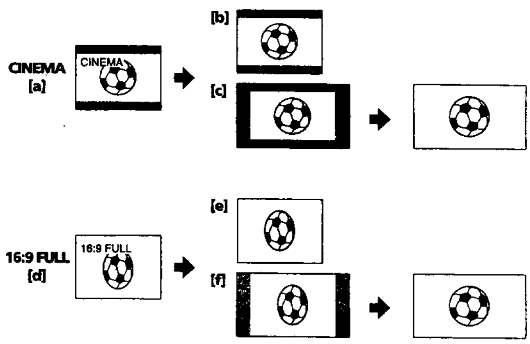
Using the N.S.light
When you set N.S.LIGHT to ON in the menu system, the picture will be more clear. The maximum limit of NightShot light is about 10 feet (about 3 m).

Notes on the NightShot
- When you keep setting NIGHTSHOT to ON in normal recording, picture may be recorded in incorrect/unnatural color.
- If focusing is difficult with the autofocus mode when using the NightShot function, use manual focus.
- You cannot use the built-in light and NIGHTSHOT function simultaneously. When you want to use either of them, turn off the other.

Using the wide mode function

Selecting the desired mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).



CINEMA
Black bands appear at the top and the bottom of the screen, and the viewfinder [a] and a normal TV screen [b] look wide. You can also watch the picture without black bands on a wide-screen TV [c].

16:9 FULL
The picture in the viewfinder [d] or on a normal TV [e] is horizontally compressed. You can watch the picture of normal images on a wide-screen TV [f].

Using the wide mode function

You can select the wide mode (OFF, CINEMA, 16:9FULL) in the menu system (p. 26).

To cancel wide mode
Select OFF in the menu system.

To watch the tape recorded in wide mode
To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the instruction manual of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode
- If wide mode is set to 16:9FULL, the Steady Shot function does not work and the ♈ indicator flashes (CCD-TR87/TR917/TR940 only).
- In wide mode, you cannot select the bounce function with FADER (CCD-TR917/TR940 only).
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- The wide mode is cancelled automatically 5 minutes after you remove the power source.
- When recording, you cannot change the mode.

Using the PROGRAM AE function

Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.



● Spotlight mode
For subjects in spotlight, such as at the theater or a formal event.

Soft Portrait mode
For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin color.

Sports Lesson mode
For recording fast-moving subjects such as in tennis or golf games.

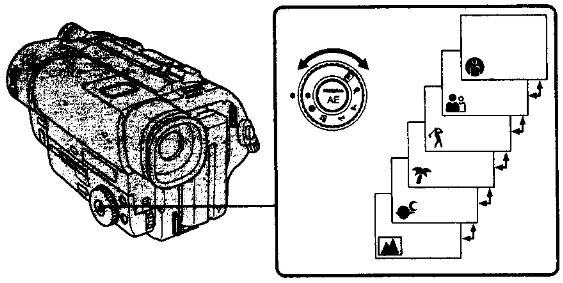
Beach & Ski mode
For people or faces in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & Moon mode
For recording subjects in dark environments such as sunsets, fireworks, neon signs, or general night views.

Landscape mode
For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Using the PROGRAM AE function

Turn the PROGRAM AE dial to select the desired PROGRAM AE mode.



To turn off program AE

Turn the PROGRAM AE dial to the ● position.

Notes on focus setting
- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

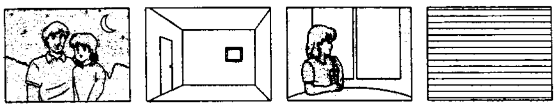
Focusing manually

– CCD-TR917/TR940 only

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.

[a] [b] [c] [d]

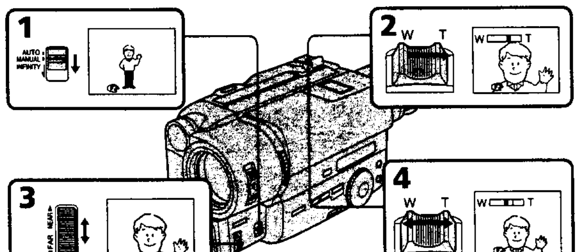


- Insufficient light **[a]**
- Subjects with little contrast - walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The indicator appears in the viewfinder.
(2) Move the power zoom lever to the "T" side in the optical zoom zone until the lever reaches the end.
(3) Turn the NEAR/FAR dial to achieve a sharp focus.
(4) Set the desired shot length using the power zoom lever.



To return to autofocus mode

Set FOCUS to AUTO. The indicator in the viewfinder disappears.

Shooting in relatively dark places
Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject

Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed.
Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing
The following indicators may appear:
when recording a very distant subject.
when the subject is too close to focus on.

Enjoying picture effect

Selecting picture effect

You can make pictures like those of television with the Picture Effect function.

[a] [b] [c] [d] [e] [f]



PASTEL [a]
The contrast of the picture is emphasized, and the picture looks like an animated cartoon.

NEG. ART [b]
The color and brightness of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

SOLARIZE [c]
The light intensity is more clear, and the picture looks like an illustration.

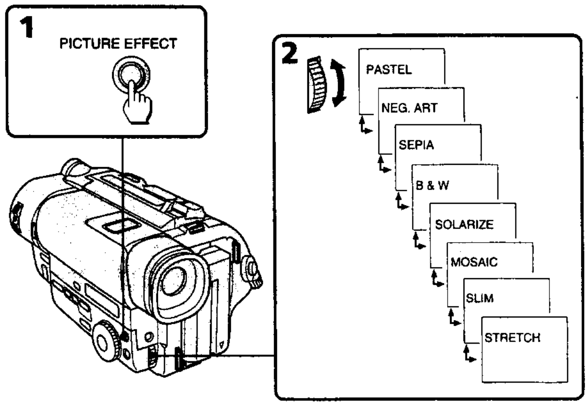
MOSAIC [d]
The picture is mosaic.

SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

Using picture effect function

(1) Press PICTURE EFFECT.
(2) Turn the control dial to select the desired picture effect mode.



To turn off picture effect
Press PICTURE EFFECT. The indicator in the viewfinder goes out.

Note on the picture effect
When you turn the power off, the camcorder returns automatically to normal mode.

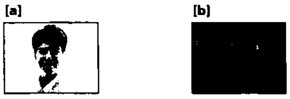
Adjusting the exposure

– CCD-TR917/TR940 only

When to adjust the exposure

Adjust the exposure manually under the following cases.

[a] [b]

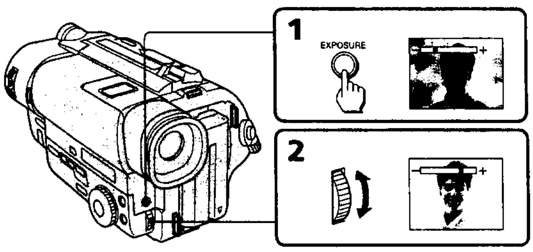


[a]
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE.
(2) Turn the control dial to adjust the brightness.



To return to automatic exposure mode
Press EXPOSURE again.

Shooting with the sun behind you
If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark
We recommend you to use the built-in light (CCD-TR67/TR87/TR917/TR940 only) or a video light (not supplied). To get the best color, you must maintain a sufficient light level.

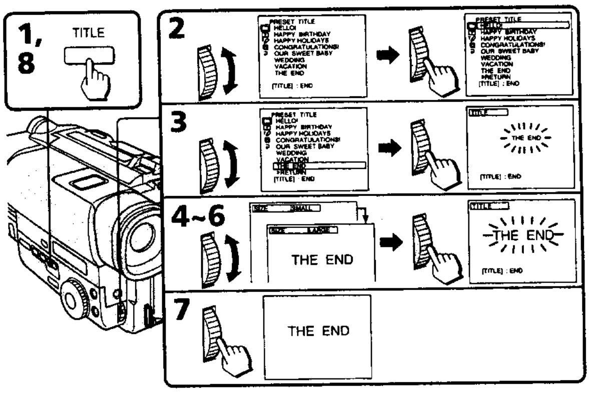
When you adjust the exposure manually
- BACK LIGHT does not work.
- If you change the setting of PROGRAM AE mode, the camcorder automatically returns to automatic exposure mode.

Superimposing a title

You can select one of eight preset titles and two custom titles. You can also select the language, color, size and position of titles.

Superimposing titles

(1) Press TITLE to display the title menu.
(2) Turn the control dial to select ▭, then press the dial.
(3) Turn the control dial to select the desired title, then press the dial. The titles are displayed in the language you selected.
(4) Turn the control dial to select the color, size, or position, then press the dial.
(5) Turn the control dial to select the desired item, then press the dial.
(6) Repeat step 4 and 5 until the title is arranged as desired.
(7) Press control dial again to complete the setting.
(8) When you want to stop recording the title, press TITLE.



To superimpose the title from beginning
After step 7, press START/STOP to start recording.

To superimpose the title while you are recording
After pressing START/STOP to start recording, start from step 1. In this case, beep is not heard.

To select the language of preset title
When you want to select the language, select ◼ before step 2. Then select language and return to step 2.

To use the custom title
When you want to use the custom title, select ▭ in step 2.

Notes on superimposing a title
- If you have not given any custom title, "- - - - ..." appears on the display.
- The FADER function works while the title is displayed, however, the title does not fade (CCD-TR917/TR940 only).
- If you display the menu or title menu while superimposing a title, the title is not recorded while the menu or title menu is being displayed.

Title color changes as follows :
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

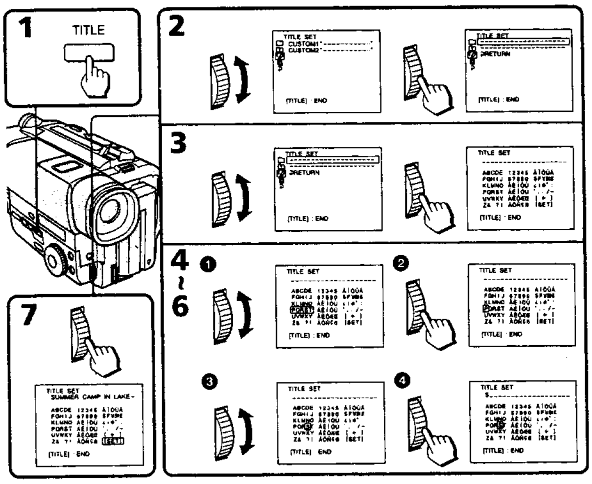
Title size changes as follows :
SMALL ←→ LARGE

Title position changes as follows :
When you select the title size "SMALL", you can choose 9 positions. When you select the title size "LARGE" you can choose 8 positions.

Notes on the title
- Depending on size or position of the title, both of date and time or either of them is not displayed.
- If you input 13 characters or more for a LARGE title, the title is automatically reduced into a proper size after the position is set.

Making your own titles

You can make up to two titles and store them in the camcorder. We recommend to set the power switch to VTR/PLAYER or eject the cassette before you begin.
Your title can have up to 20 characters.
(1) Press TITLE to display the title menu.
(2) Turn the control dial to select ꝉ𝓅, then press the dial.
(3) Turn the control dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the dial.
(4) Turn the control dial to select the column of the desired character, then press the dial.
(5) Turn the control dial to select the desired character, then press the dial.
(6) Repeat step 4 and 5 until you finish the title.
(7) For finishing the titling work, turn the control dial to select SET, then press the dial.



To edit a title you have stored
In step 3, select CUSTOM1 or CUSTOM2, depending on which title you want to edit, then change the title.

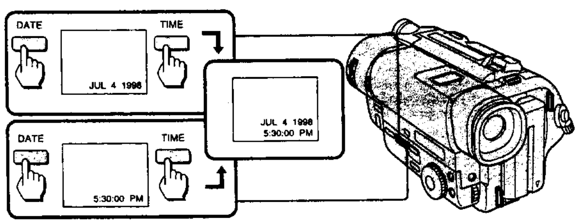
Note
You can not enter over 20 characters title.

If you take 5 minutes or longer to enter characters while a cassette is in the camcorder
The power goes off automatically. Characters you have entered remain. Turn STANDBY down once and then up again, then proceed from step 1.

To delete a title
In step 4, turn the control dial to select [←] then press the dial. The last character is erased. Repeat this step until all characters are deleted. Do not erase the title by selecting empty spaces. If you do so, a title full of empty spaces is stored.

Recording with the date/time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. Press DATE (or TIME), then press TIME (or DATE) to display the date and time together.
The clock is set to East Coast Standard time at the factory. You can reset the clock in the menu system.

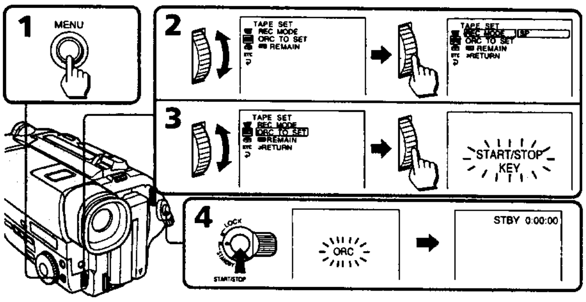


To stop recording with the date and/or time
Press DATE and/or TIME again. The date and/or time indicator disappears. The recording continues.

Optimizing the recording condition

Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select [tape set icon], then press the dial.
(3) Turn the control dial to select ORC TO SET, then press the dial.
"START/STOP KEY" flashes.
(4) Press START/STOP.
The camcorder takes about 10 seconds to check the tape condition and then returns to Standby mode.



Each time you insert the cassette

Perform the above procedures.

Notes on the ORC function

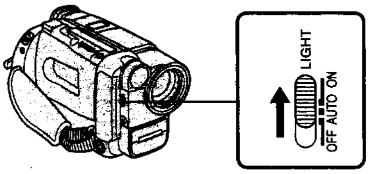
- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.

Using the built-in light

– CCD-TR67/TR87/TR917/TR940 only

You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 5 feet (1.5 meters).

While the camcorder is in Standby mode, slide LIGHT to ON. The built-in light turns on.
The built-in light turns on/off by turning on/off STANDBY.



To stop using the built-in light

Slide LIGHT to OFF.

To turn on the built-in light automatically

Slide LIGHT to AUTO.
The built-in light automatically turns on and off according to the ambient brightness. However, if the built-in light turns on for more than about 5 minutes, it automatically turns off. In this case, turn STANDBY down once and turn it up again.

Notes

- The battery pack is quickly discharging while the built-in light is turned on. Slide LIGHT to OFF when not in use.
- When you do not use the camcorder, slide LIGHT to OFF and remove the battery pack to avoid turning on the built-in light.
- When flickering occurs when you shoot white and bright subjects in AUTO mode, slide LIGHT to ON.
- The built-in light may turn on/off when you use the PROGRAM AE or BACK LIGHT function.
- When inserting or ejecting a cassette, the built-in light may be turned off.

CAUTION

Be careful not to touch the lighting section, because the plastic window and surrounding surfaces are hot while the light is on. It remains hot for a while after the light is turned off.

DANGER

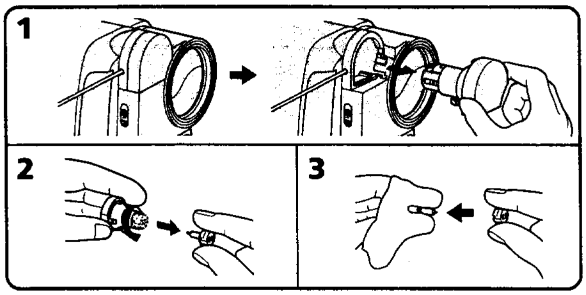
Not to be handled by children.
Emits intense heat and light.
Use with caution to reduce the risk of fire or injury to persons.
Do not direct light at persons or materials from less than 4 feet (1.22 meters) during use and until cool.
Slide LIGHT to OFF when not in use.

Advanced operations

Replacing the bulb

Use the Sony XB-3D halogen lamp (not supplied). The supplied halogen lamp is not on the market. Purchase the Sony XB-3D halogen lamp.
Remove the power source before replacing the bulb.

(1) While pushing the hole under the built-in light unit using a wire, remove the unit.
(2) Turn the bulb housing counterclockwise and detach from the built-in light unit.
(3) Replace the bulb using a dry cloth.
(4) Attach the bulb housing turning it clockwise, then replace the built-in light unit.



CAUTION

- When replacing the bulb, use only the Sony XB-3D halogen lamp (not supplied) to reduce the risk of fire.
- To prevent possible burn hazard, disconnect the power source before replacing and do not touch the bulb until the bulb becomes cool enough to handle (for about 30 minutes or more).

Note

To prevent the bulb from being smudged with finger prints, handle it with a dry cloth, etc. If the bulb is smudged, wipe it completely.

Releasing the STEADY SHOT function

– CCD-TR87/TR917/TR940 only

When the Steady Shot function is working, the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use the Steady Shot function. The [steady shot off icon] indicator lights up when you release the Steady Shot function. Do not use the Steady Shot function when shooting a stationary object with a tripod.
You can select ON or OFF in the menu system (p. 26).

To activate the Steady Shot function again

Set STEADYSHOT to ON in the menu system.

Notes on the Steady Shot function

- The Steady Shot function will not correct excessive camera-shake.
- When you set the STEADYSHOT function on or off in the menu system, the exposure may fluctuate.
- Steady Shot does not operate in 16:9 FULL mode. If you set STEADYSHOT to ON in the menu system, the [steady shot icon] indicator flashes.

Advanced operations

Editing onto another tape

You can create your own video program by editing with any other 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC, Betamax or ED Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable.
Set the input selector on the VCR to LINE, if available.
Set EDIT to ON in the menu system (p. 26).

Starting editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate slightly before the point where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.
(4) Press ❚❚ on the camcorder and then press ❚❚ of the VCR after 2, 3 seconds to start editing.

To edit more scenes

Repeat steps 2 to 4.

To superimpose the title while you are editing

You can superimpose the title while you are editing. Refer to "Superimpose a title" (p. 44).

To stop editing

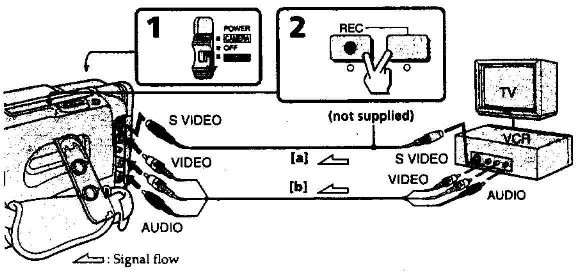
Press ■ on both the camcorder and the VCR.

Note on the DISPLAY function
– CCD-TR67/TR87/TR917/TR940 only
If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Note on Fine Synchro Edit
If you connect a video deck that has the Fine Synchro Edit feature to the LANC jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

Recording from a VCR or TV

–CCD-TR917/TR940 only
You can record a tape from another VCR or a TV program from a TV that has video/audio outputs. Connect the camcorder to the VCR or TV using the supplied A/V cable.
(1) While pressing the small green button on the POWER switch, set it to VTR.
(2) Press ● REC and the button on the right together on the camcorder at the point where you want to start recording.
In recording and recording pause mode, S video and VIDEO/AUDIO jacks automatically work as input jacks.



If your VCR or TV has an S video jack, connect using the S video connecting cable (not supplied) **[a]** to obtain a high quality picture.

If your VCR or TV is a monaural type, connect only the white plug for audio on both the camcorder and the VCR or TV.
If your VCR or TV does not have an S VIDEO OUT jack, connect cable **[b]**. Do not connect the S video connecting cable (not supplied) **[a]** to the camcorder.

To check the picture from a VCR or TV before recording
Press ❚❚ after pressing ●. You can check the picture in the viewfinder.

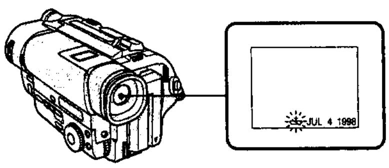
To stop recording
Press ■.

Note on recording
You cannot record a picture that has a copyright control signal for copyright protection of software. "COPY INHIBIT" appears if you try to record such a picture.

Additional information

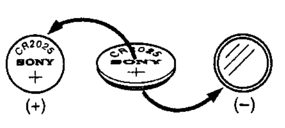
Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)



Notes on lithium battery

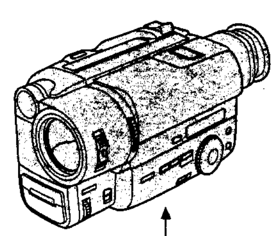
- **Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.**
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**

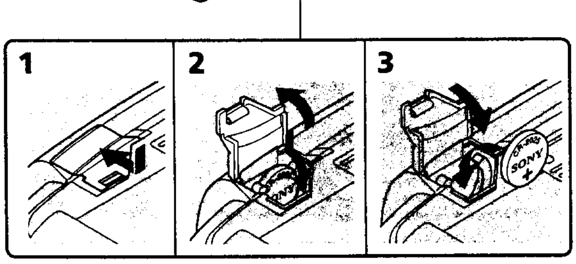


WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.
(1) Open the lid of the lithium battery compartment.
(2) Push the lithium battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

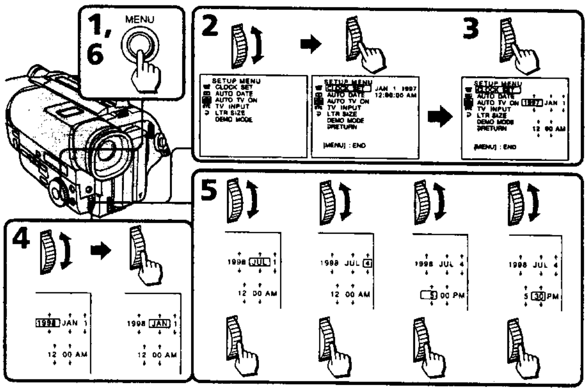




Resetting the date and time

You can reset the date and time in the menu system.

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select , then press the dial.
(3) Turn the control dial to select CLOCK SET, then press the dial.
(4) Turn the control dial to adjust the desired year, then press the dial.
(5) Set the month, day, hour and minute by turning the control dial and pressing the dial.
(6) Press MENU to erase the menu display.



To correct the date and time setting
Repeat the above procedure.

To check the preset date and time
Press DATE to display the date indicator.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year changes as follows:

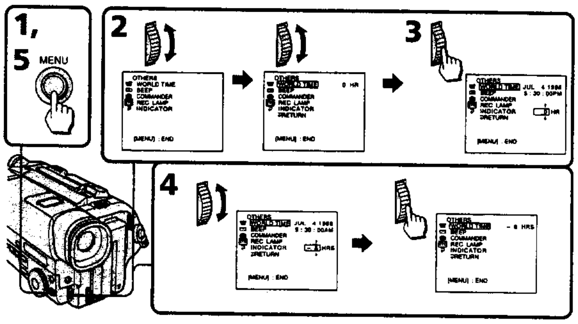
1997 ←→ 1998 ←→ · · · · → 2029

Note on the time indicator
The internal clock of this camcorder operates on a 12-hour cycle.
• 12:00 AM stands for midnight.
• 12:00 PM stands for noon.

Simple setting of clock by time difference

You can easily set the clock for a local time by a time difference in the menu system.

(1) While the camcorder is the standby mode, press MENU to display the menu.
(2) Turn the control dial to select ETC, then press the dial.
(3) Turn the control dial to select WORLD TIME, then press the dial.
(4) Turn the control dial to set a time difference, and press the dial. The hour of clock changes in relation to a time difference which you set.
(5) Press MENU to erase the menu display.



Note on WORLD TIME
If the time is not set, WORLD TIME does not work.

Usable cassettes and playback modes

Selecting cassette types

– CCD-TR917/TR940 only
This Hi8 system is an extension of the standard 8 mm system, and was developed to realize higher picture quality.
You can use either Hi8 or standard 8 mm video cassette for this camera. When you use a Hi8 video cassette, the recording is made in the Hi8 system. When you use a standard 8 mm video cassette, the recording is made in the standard 8 mm system. Standard 8 mm video cassette is incapable of recording in the Hi8 system.
If you intend to use a standard 8 mm video recorder/player to play back a video tape, you are required to use a standard 8 mm video cassette for recording.

What is video 8 XR /video Hi8 XR
"XR", that is an abbreviation of "Extended Resolution", represents the new type of 8 mm camcorder that has the property to realize more quality picture compared with the conventional camcorders including the Hi8 models. You can record and play back pictures more clearly in detail with the "XR" camcorder.
Video tape recorded by a camcorder having the "XR" function shows excellent picture quality at maximum when it is played back by the "XR" camcorder.
When video tape recorded by this "XR" camcorder is played back by a conventional 8/Hi8 camcorder or when video tape recorded by a conventional 8/Hi8 camcorder is played back by this "XR" camcorder, the playback picture quality is in the normal quality of the 8/Hi8 camcorder.

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo
- CCD-TR917/TR940 only
When you play back a tape, the sound will be in monaural if:
• You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
• You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Foreign 8 mm video
Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV color system of foreign countries.

Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment
Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power
Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up. Remaining time in minutes appears.



When the remaining battery indicator reaches the lowest point, the indicator may appear and start flashing in the viewfinder.
When the indicator changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Tips for using the battery pack

Notes on the rechargeable battery pack

Caution
Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Be sure to observe the following
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The life of the battery pack
If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature
You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Notes on the "InfoLITHIUM" battery pack

What is "InfoLITHIUM"
The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption. Sony recommends that you use the "InfoLITHIUM" battery pack with video equipment having the ⓘ InfoLITHIUM mark.
When you use this battery pack with video equipment having the ⓘ InfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.
"InfoLITHIUM" is a trademark of Sony Corporation.
* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed
The power consumption of the camcorder changes depending on its use, such as how the autofocusing is working.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time in the viewfinder, the ▭ indicator may also flash under some condition.

To obtain more accurate remaining battery indication
Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.
- If the indication seems incorrect, recharge the battery pack fully (Full charge[1]). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the ⓘ InfoLITHIUM mark, make sure that you use up the battery pack on the equipment having the ⓘ InfoLITHIUM mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operating instructions
The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operating instructions is measured under the condition of using a fully charged (or normal charged) battery pack in 77°F (25°C). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operating instructions.

[1] Full charge: Charging until FULL appears in the display window.

Maintenance information and precautions

Notes on the battery case

– **CCD-TR67/TR87/TR940 only**
- **Use only with alkaline batteries. You cannot use the battery case with manganese batteries or size AA (LR6) rechargeable NiCd batteries.**
- **Using with Sony alkaline batteries is preferable.**
- Battery life is remarkably shorter in a cold environment (lower than 50°F/10°C).
- Keep the metal part clean. If it gets dirty, wipe it with a soft cloth.
- Do not disassemble or convert the battery case.
- Do not expose the battery case to any mechanical shock.
- During recording, the battery case heats up. This is not cause for concern.
- Prevent the electrode in the battery case from coming in contact with a metal object.
- If you will not use the battery case for a long time, detach the battery case from the camcorder and remove the batteries from the battery case.

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please, take the following precautions.

Inside the camcorder
If there is moisture inside the camcorder, the beep sounds and the ▣ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ≜ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

On the lens
If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.
(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and "▲ CLEANING CASSETTE" message appear one after another or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] ——→ [b]

[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH/V8-25CLD cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the Sony V8-25CLH/V8-25CLD cleaning cassette is not available in your area, consult your nearest Sony dealer.

Precautions

Camcorder operation
- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

Built-in light
-CCD-TR67/TR87/TR917/TR940 only
- Do not knock or jolt the built-in light while it is turned on as it may damage the bulb or shorten the life of the bulb.
- Do not leave the built-in light on while it is resting on or against something; it may cause a fire or damage the built-in light.

Maintenance information and precautions

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Camcorder care

- When the camcorder is not to be used for a long time, remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If battery leakage occurred

- Wipe off the liquid in the battery case carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

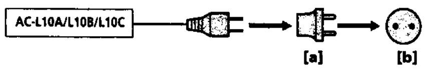
If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Using your camcorder abroad

Each country or area has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz.
Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in color systems

This camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV.
Check the following list.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

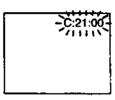
PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Self-diagnosis display

The camcorder has a self-diagnosis display.
This function displays the camcorder's condition with five digits (a combination of a letter and figures) in the viewfinder or in the display. If this occurs, check the following code chart. The five-digit display informs you of the camcorder's current condition. The last two digits (indicated by □□) will differ depending on the state of the camcorder.

Viewfinder

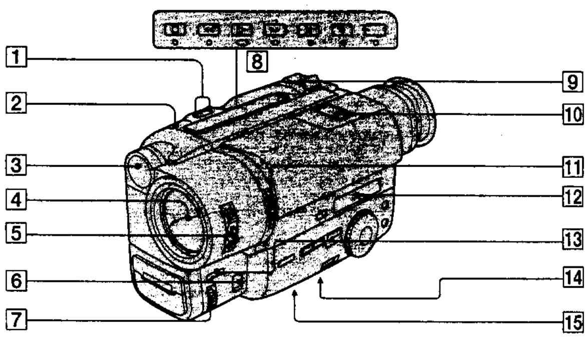


Self-diagnosis display
- C:□□:□□
  You can service the camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local autorized Sony facilitiy.

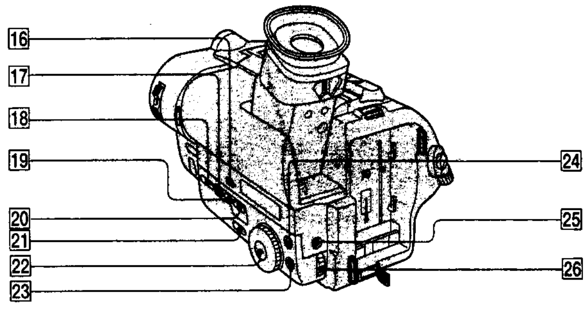
Five-digit display	Cause and/or Corrective Actions
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 62)
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony V8-25CLH/V8-25CLD cleaning cassette (not supplied). (p. 63)
C:23:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 61)
C:31:□□ C:32:□□	• A servicable situation not malfunctioned above has occurred. → Remove the cassette and insert it again, then operate the camcorder. → Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate the camcorder.
E:61:□□ E:62:□□	• A camcorder malfunction which you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the five digits. (example: E:61:10)

If you are unable to resolve the problem, contact your Sony dealer or local authorized Sony service facility.

Identifying the parts



1. **EDITSEARCH button** (p. 18)
2. **LASER LINK button** (CCD-TR87/TR917/TR940 only) (p. 20)
3. **Built-in light** (CCD-TR67/TR87/TR917/TR940 only) (p. 49)
4. **Lens cover**
5. **POWER switch** (p. 12)
6. **FOCUS switch** (CCD-TR917/TR940 only) (p. 39)
7. **NEAR/FAR dial** (CCD-TR917/TR940 only) (p. 39)
8. **Video control buttons** (p. 21)
   - ■ STOP (stop)
   - ◀◀ REW (rewind)
   - ▶ PLAY (playback)
   - ▶▶ FF (fastforward)
   - ❚❚ PAUSE (pause)
   - ● REC (recording) (CCD-TR917/TR940 only)
9. **Power zoom lever** (p. 15)
10. **Lighting aperture**
11. **NIGHTSHOT switch** (CCD-TR917/TR940 only) (p. 33)
12. **Display window** (p. 78)
13. **FADER button** (CCD-TR917/TR940 only) (p. 32)
14. **Tripod receptacle** (p. 17)
    Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm) otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.
15. **Lithium battery compertment** (p. 55)



16 **COUNTER RESET button** (p. 14)

17 **DATE button** (p. 47)

18 **BACK LIGHT button** (p. 30)

19 **TIME button** (p. 47)

20 **TITLE button** (p. 44)

21 **START/STOP MODE switch** (p. 16)

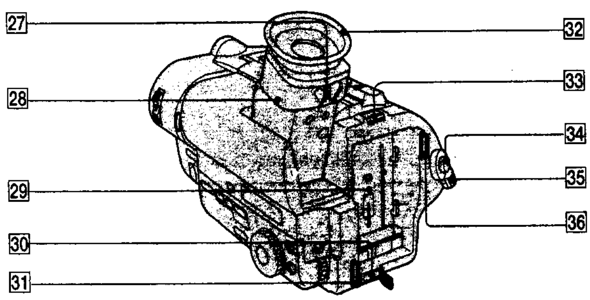
22 **PROGRAM AE dial** (p. 37)

23 **MENU button** (p. 26)

24 **PICTURE EFFECT** (p. 41)

25 **EXPOSURE button** (CCD-TR917/TR940 only) (p. 42)

26 **Control dial** (p. 26)



27 **Viewfinder lens adjustment lever** (p. 13)

28 **Viewfinder** (p. 13)

29 **Battery mounting surface**

30 **DC IN jack** (p. 8, 23)

31 **Hook for shoulder strap** (p. 77)

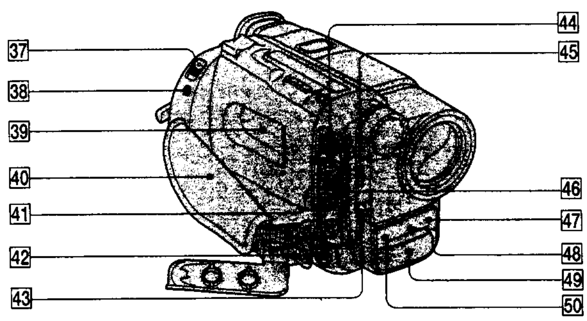
32 **Eyecup**

33 **BATT RELEASE lever** (p. 7, 10)

34 **START/STOP button** (p. 12)

35 **STANDBY switch** (p. 12)

36 **Hook for shoulder strap** (p. 77)



37 **EJECT switch** (p. 11)

38 **LANC ⏣ control jack**
⏣ stands for Local Application Control Bus System. The ⏣ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

39 **Cassette compartment** (p. 11)

40 **Grip strap** (p. 17)

41 **RFU DC OUT (RFU adaptor DC output) jack** (p. 20)

42 **∩ (headphones) jack** (CCD-TR917/TR940 only) (p. 22)

43 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

44 **S VIDEO jack** (CCD-TR917/TR940 only) (p. 19)

45 **Light switch** (CCD-TR67/TR87/TR917/TR940 only) (p. 49)

46 **VIDEO/AUDIO jacks** (p. 19)

47 **Remote sensor** (CCD-TR67/TR87/TR917/TR940 only) (p. 76)
Aim the Remote Commander here for remote control.

48 **LASER LINK emitter** (CCD-TR87/TR917/TR940 only) (p. 20)

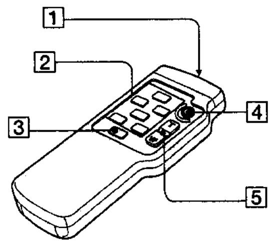
49 **Microphone**

50 **Camera recording/battery lamp** (p. 12)

Remote Commander

– CCD-TR67/TR87/TR917/TR940 only

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **Video control buttons** (p. 21)

3 **DISPLAY button** (p. 21)

4 **START/STOP button** (p. 12)

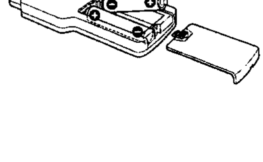
5 **Power zoom button** (p. 15)

Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

To prepare the Remote Commander

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

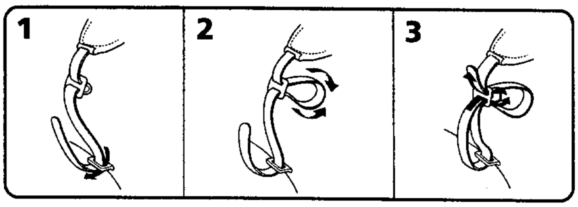


Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation.
When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap.



To watch the demonstration

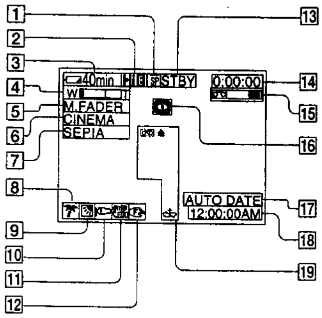
You can start the demonstration by setting DEMO MODE in the menu system.
You can also start the demonstration by the following operation.
When NIGHTSHOT is set to ON, you cannot watch the demonstration (CCD- TR917/TR940 only).

To enter demo mode
(1) Eject the cassette and set the POWER switch to VTR/PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ► set the POWER switch to CAMERA.

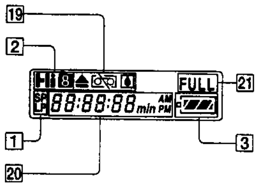
To exit demo mode
(1) Set the POWER switch to VTR/PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ■ set the POWER switch to CAMERA.

Operation indicators

Viewfinder



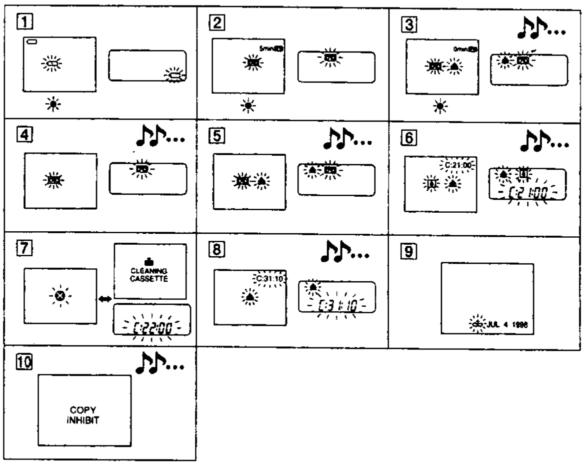
Display window



[1] **Recording mode indicator** (p. 27)
[2] **Playing back or recording in Hi8 format** (CCD-TR917/TR940 only) (p. 58)
[3] **Remaining battery time indicator**
[4] **Exposure indicator** (CCD- TR917/TR940 only) (p. 42)/ **Zoom indicator** (p. 15)
[5] **FADER indicator** (CCD-TR917/TR940 only) (p. 32)
[6] **Wide mode indicator** (p. 34)
[7] **PICTURE EFFECT indicator** (p. 40)
[8] **PROGRAM AE indicator** (p. 36)
[9] **Backlight indicator** (p. 30)
[10] **WIND indicator** (CCD-TR917/TR940 only) (p. 28)
[11] **Steady Shot off indicator** (CCD-TR87/TR917/TR940 only) (p. 51)
[12] **Manual focusing** (CCD- TR917/TR940 only) (p. 39)
[13] **Video control mode** (p. 21)
[14] **Tape counter** (p. 14)/**Self-diagnosis functions indicator** (p. 69)/**5SEC mode indicator** (p. 16)
[15] **Remaining tape indicator**
5min → 0min
[16] **NIGHTSHOT indicator** (CCD- TR917/TR940 only) (p. 33)
[17] **AUTO DATE indicator** (p. 12)/**Date indicator** (p. 47)
[18] **Time indicator** (p. 47)
[19] **Warning indicators** (p. 79)
[20] **Date or time indicator** (p. 47)/**Tape counter indicator** (p. 14)/**Self-diagnosis functions indicator** (p. 69)/**Remaining battery time indicator** (p. 8)
[21] **FULL charge indicator** (p. 8)

Warning indicators

If indicators flash in the viewfinder or in the display window, check the following:
♪♪... : you can hear the beep sound when the BEEP is set to ON.



[1] **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

[2] **The tape is near the end.**
The flashing is slow.

[3] **The tape has run out.**
The flashing becomes rapid.

[4] **No tape has been inserted.**

[5] **The tab on the tape is out (red).**

[6] **Moisture condensation has occurred.**

[7] **The video heads may be contaminated.**

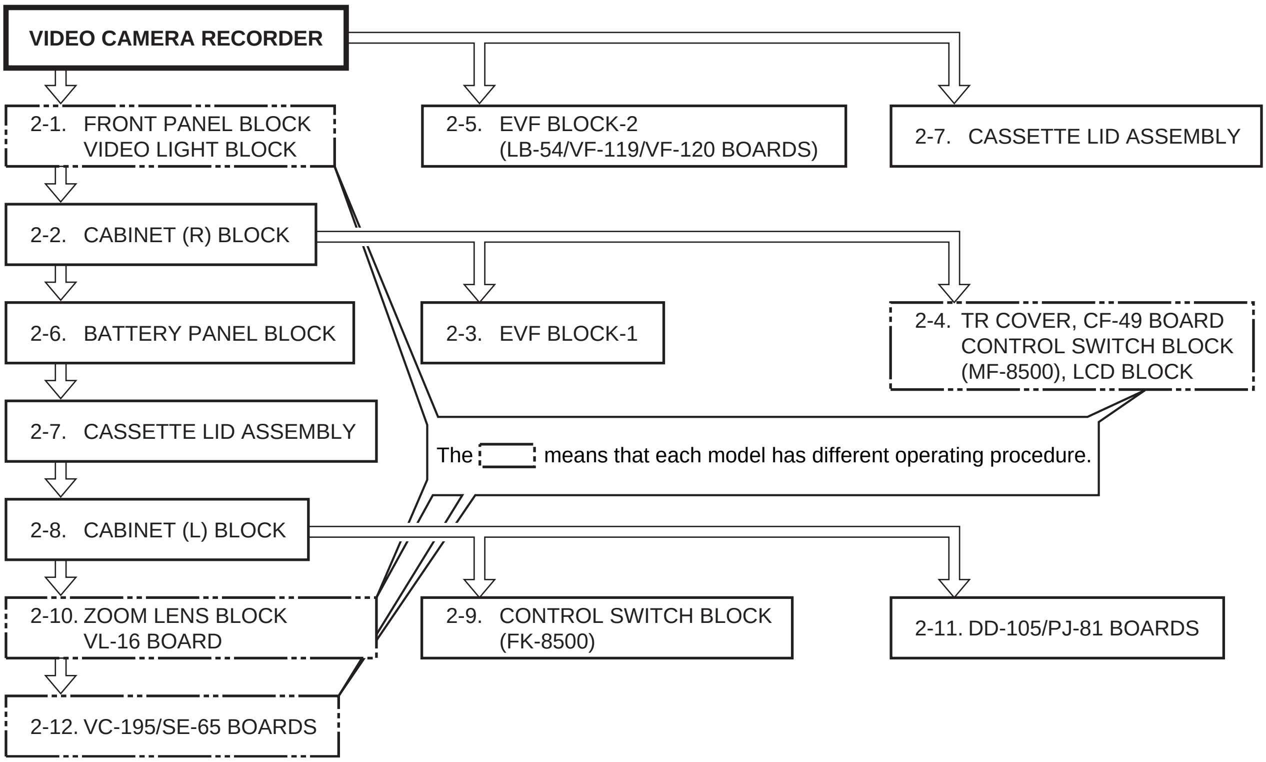
[8] **Some other trouble has occurred.**
Use the self-diagnosis function (p. 69).
If the display does not disappear contact your Sony dealer or local authorized Sony service facility.

[9] **The lithium battery is weak or is not installed.**

[10] **The source tape has copyright control signal.**
(CCD-TR917/TR940 only) (p. 53)

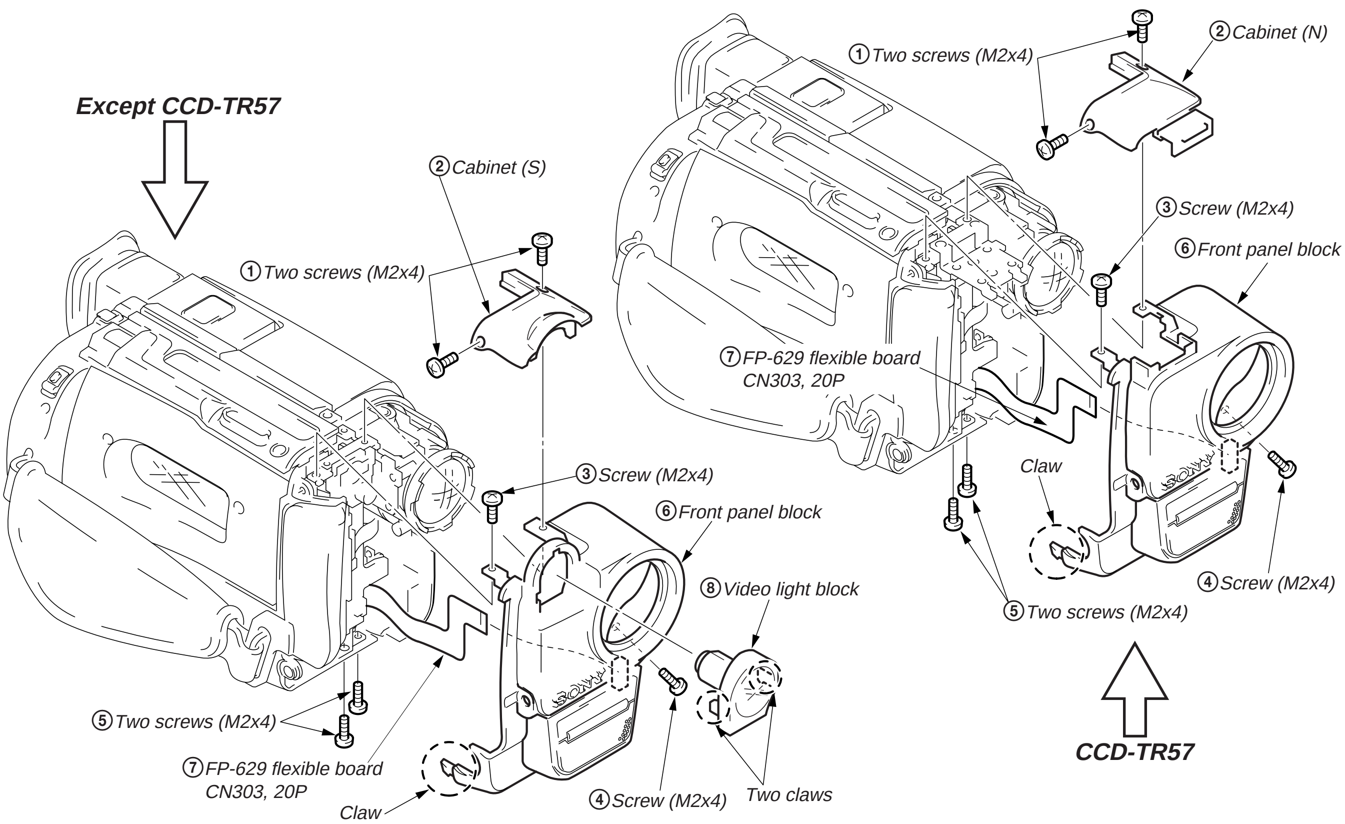
SECTION 2
DISASSEMBLY

The eqipment can be removed using the following procedure.



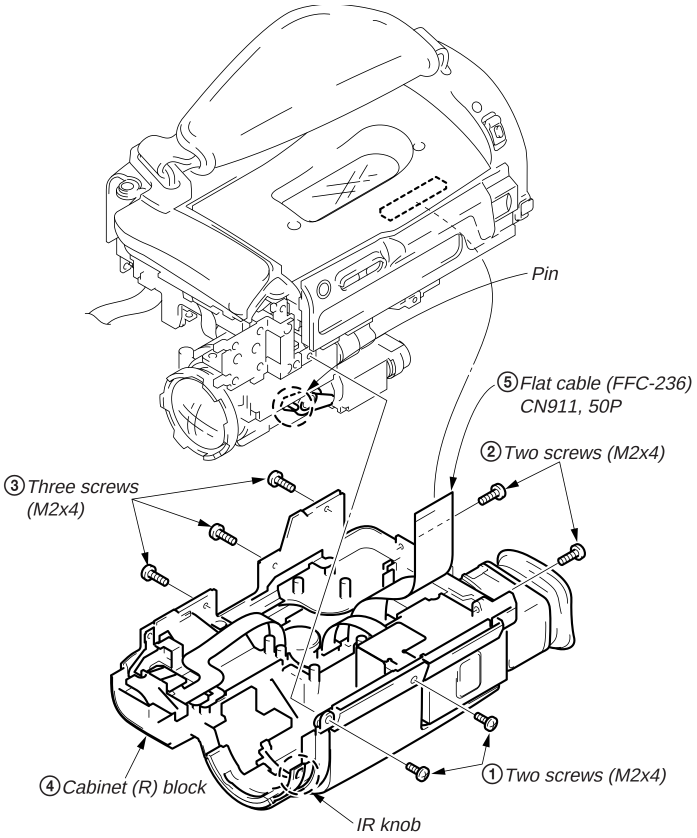
NOTE : Follow the disassembly procedure in the numerical order given.

2-1. REMOVAL OF FRONT PANEL BLOCK AND VIDEO LIGHT BLOCK

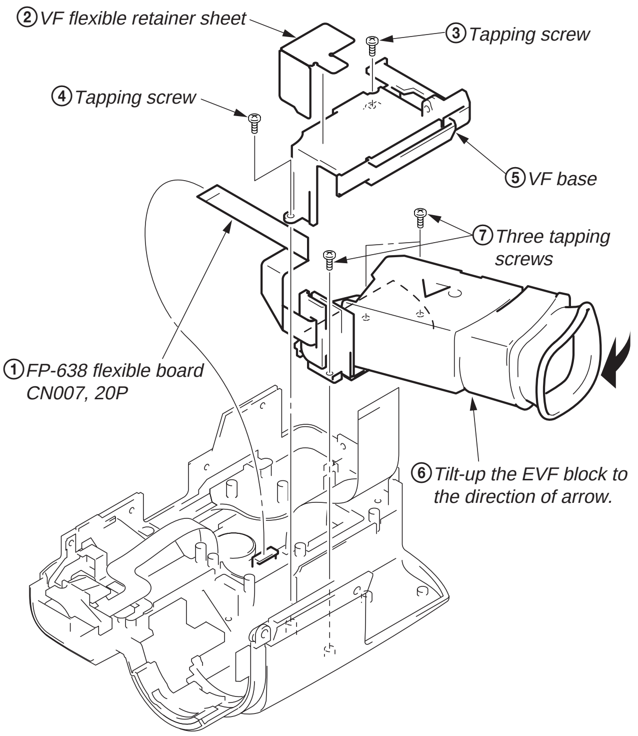


2-2. REMOVAL OF CABINET (R) BLOCK

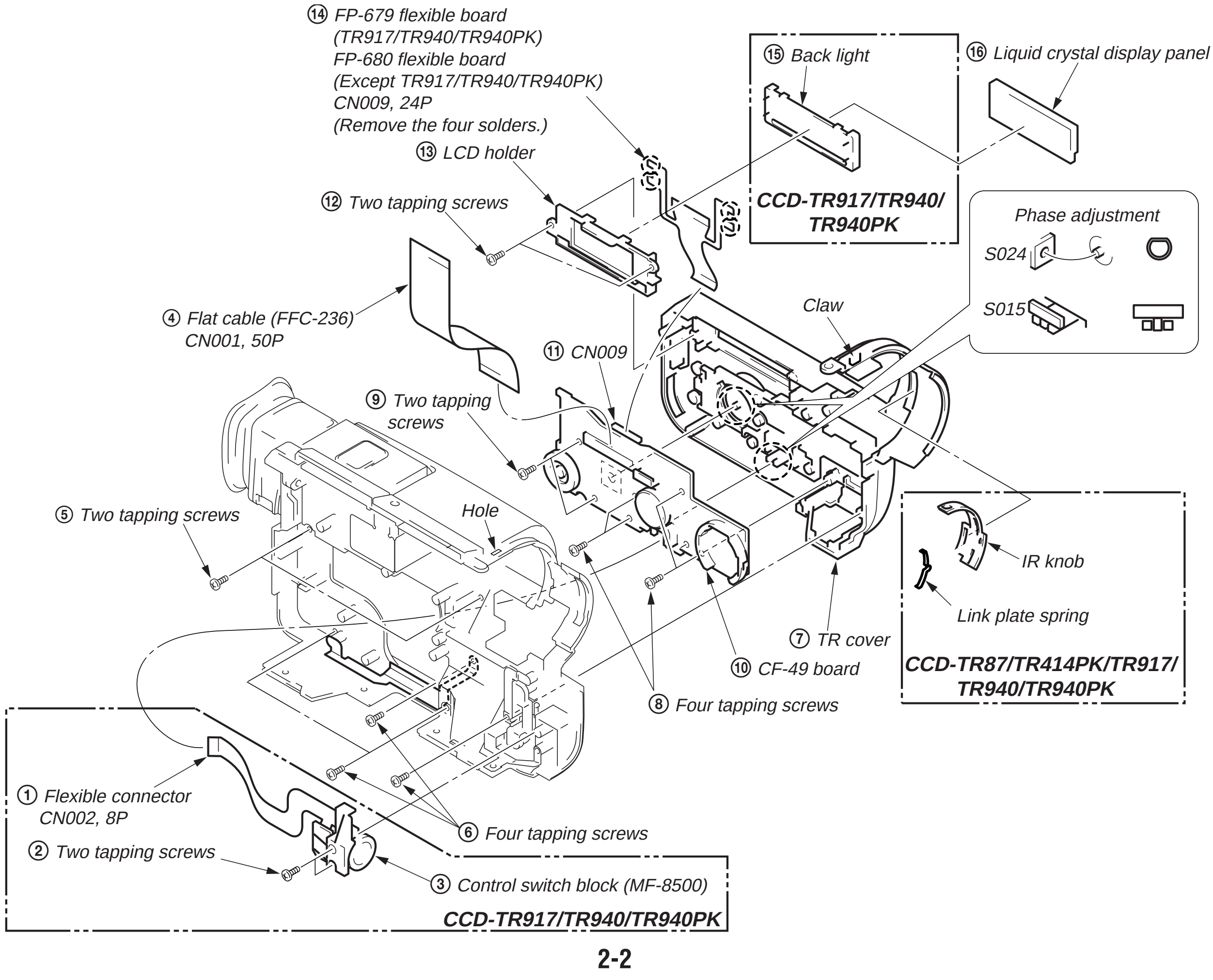
Note : *Be sure to that the pin of the Lens assembly is put into the hole of the IR knob when attaching.*
(CCD-TR87/TR414PK/TR917/TR940/TR940PK)



2-3. REMOVAL OF EVF BLOCK-1

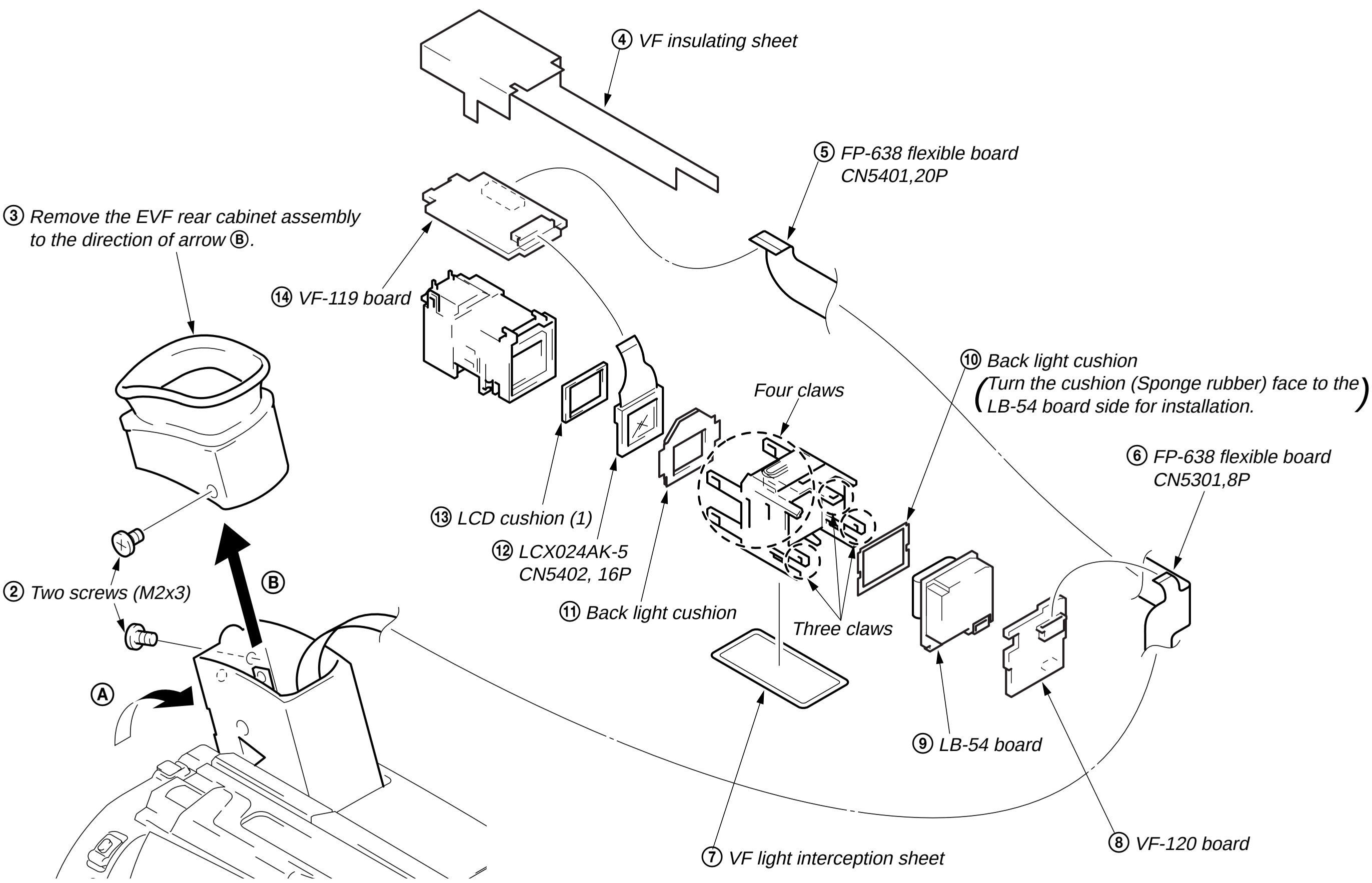


2-4. REMOVAL OF TR COVER, CF-49 BOARD AND LCD BLOCK

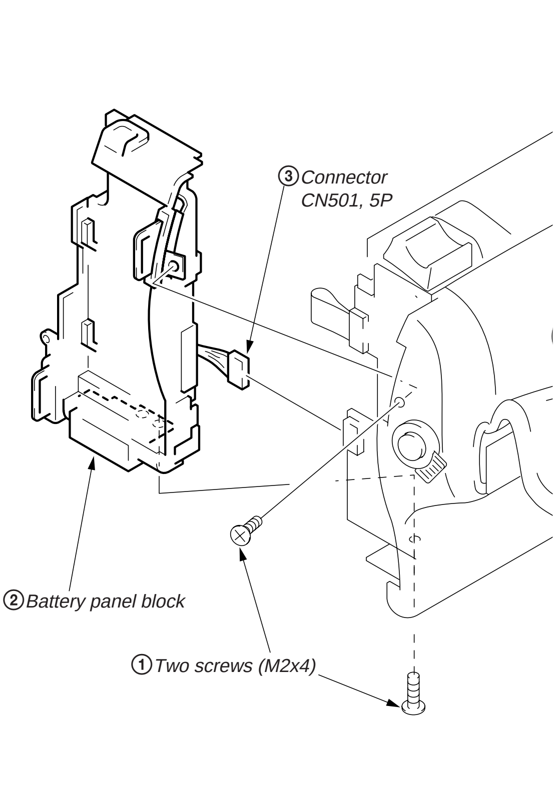


2-5. REMOVAL OF EVF BLOCK-2 (LB-54, VF-119 AND VF-120 BOARDS)

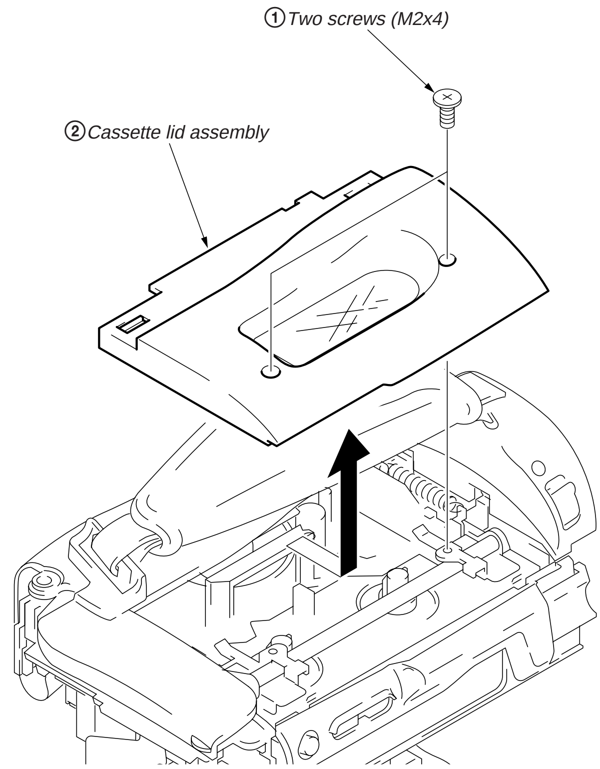
① *Tilt-up the EVF block to the direction of arrow Ⓐ.*



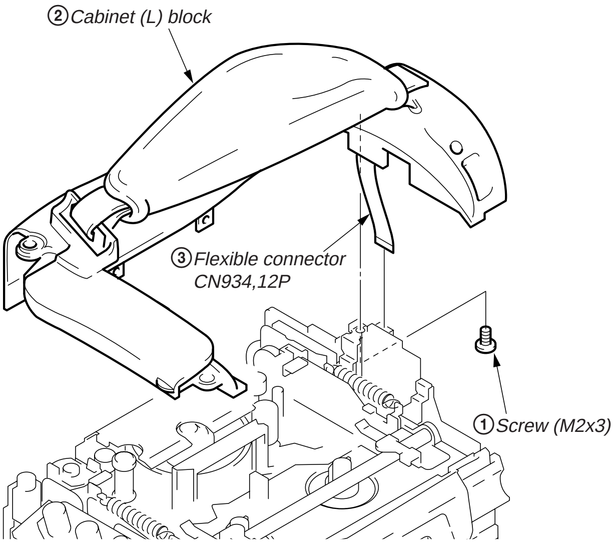
2-6. REMOVAL OF BATTERY PANEL BLOCK



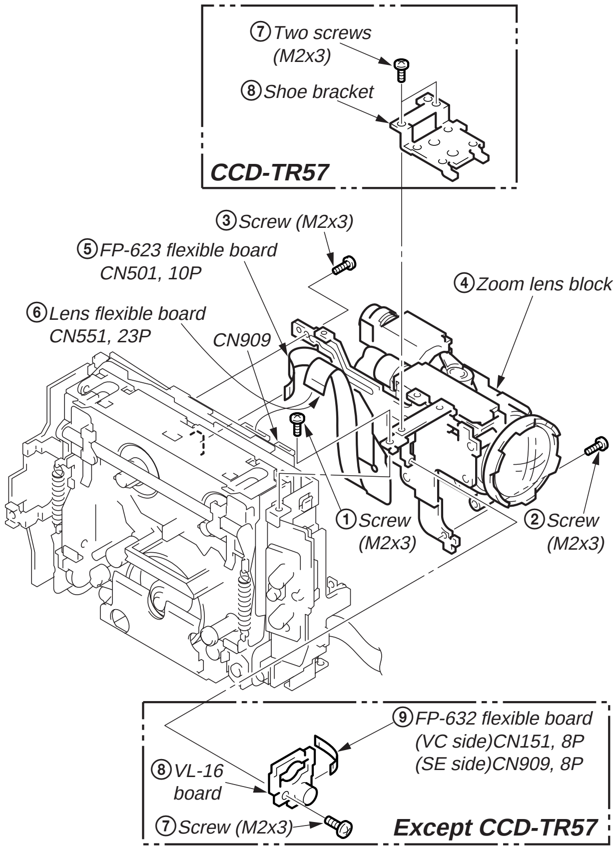
2-7. REMOVAL OF CASSETTE LID ASSEMBLY



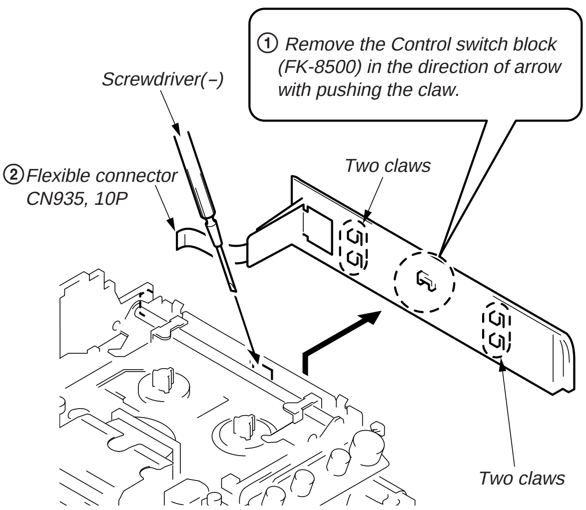
2-8. REMOVAL OF CABINET (L) BLOCK



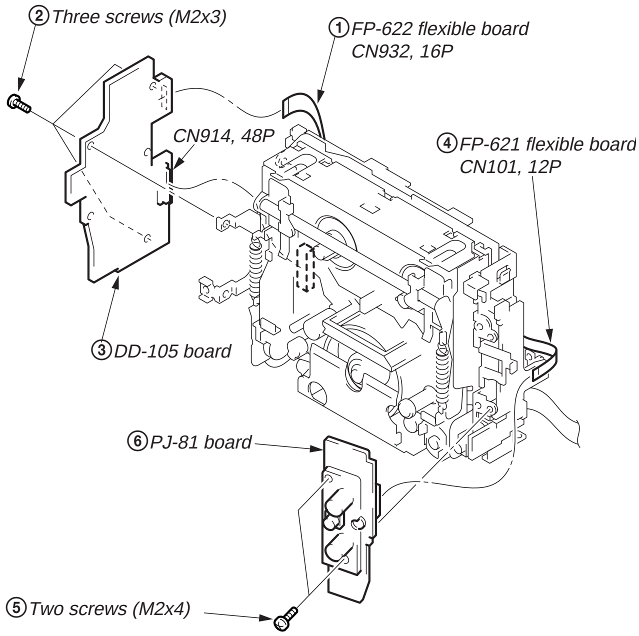
2-10. REMOVAL OF ZOOM LENS BLOCK AND VL-16 BOARD



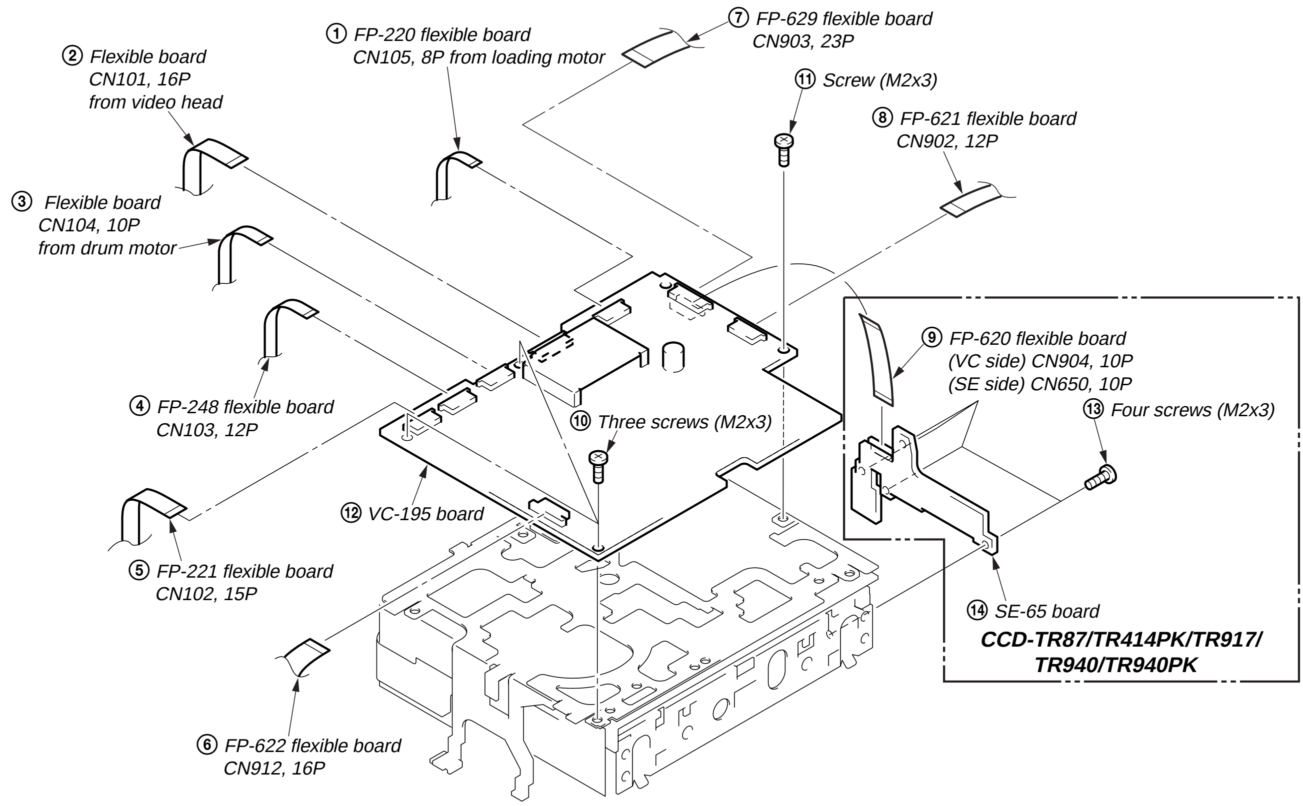
2-9. REMOVAL OF CONTROL SWITCH BLOCK (FK-8500)



2-11. REMOVAL OF DD-105 AND PJ-81 BOARDS

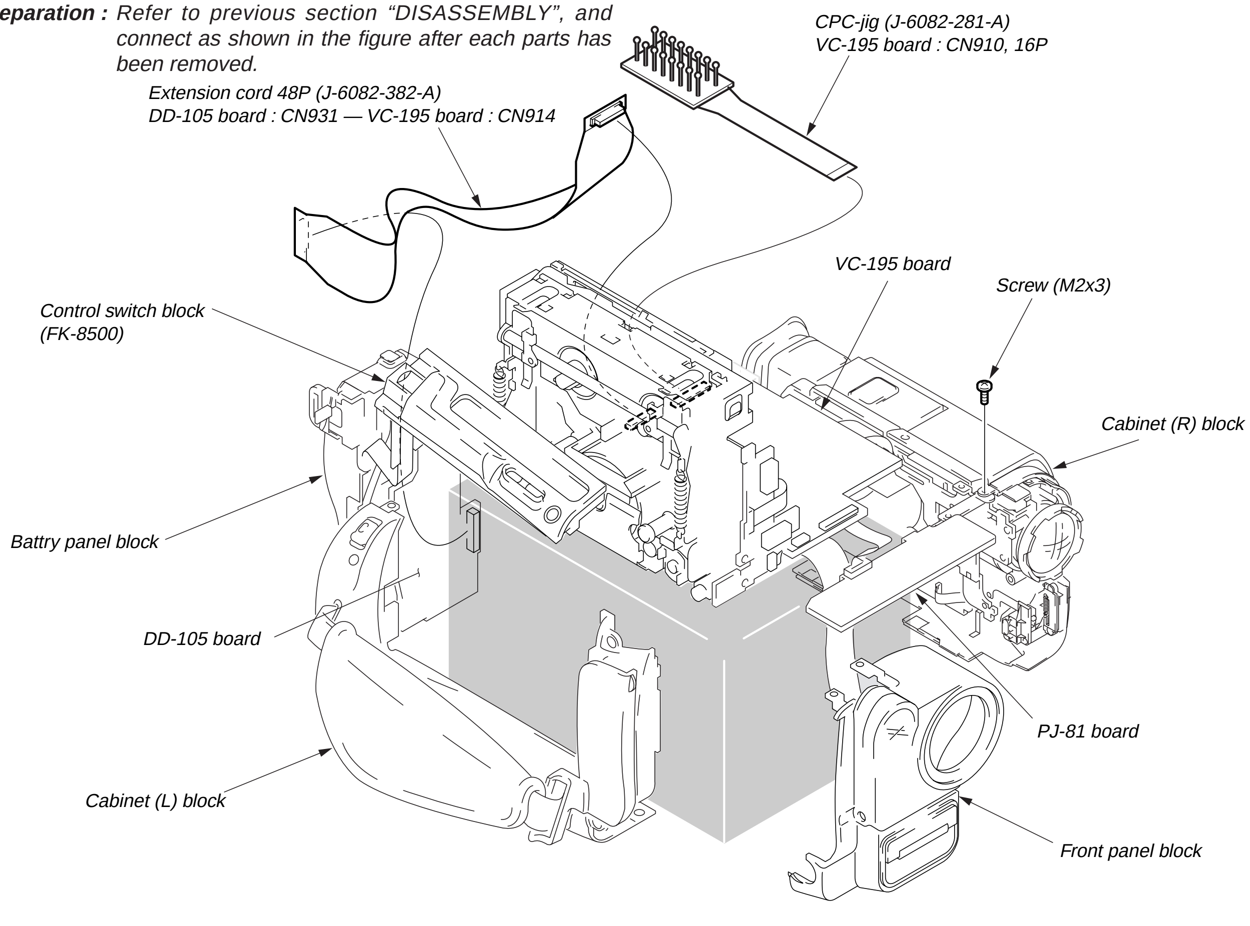


2-12. REMOVAL OF VC-195 AND SE-65 BOARDS

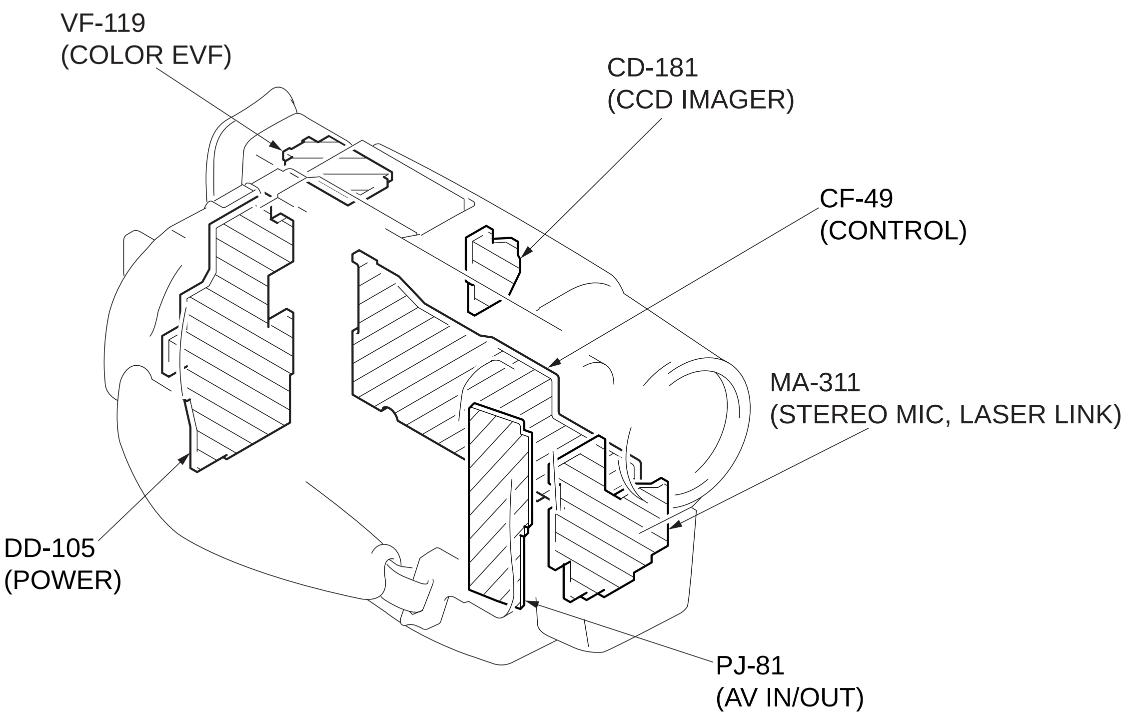


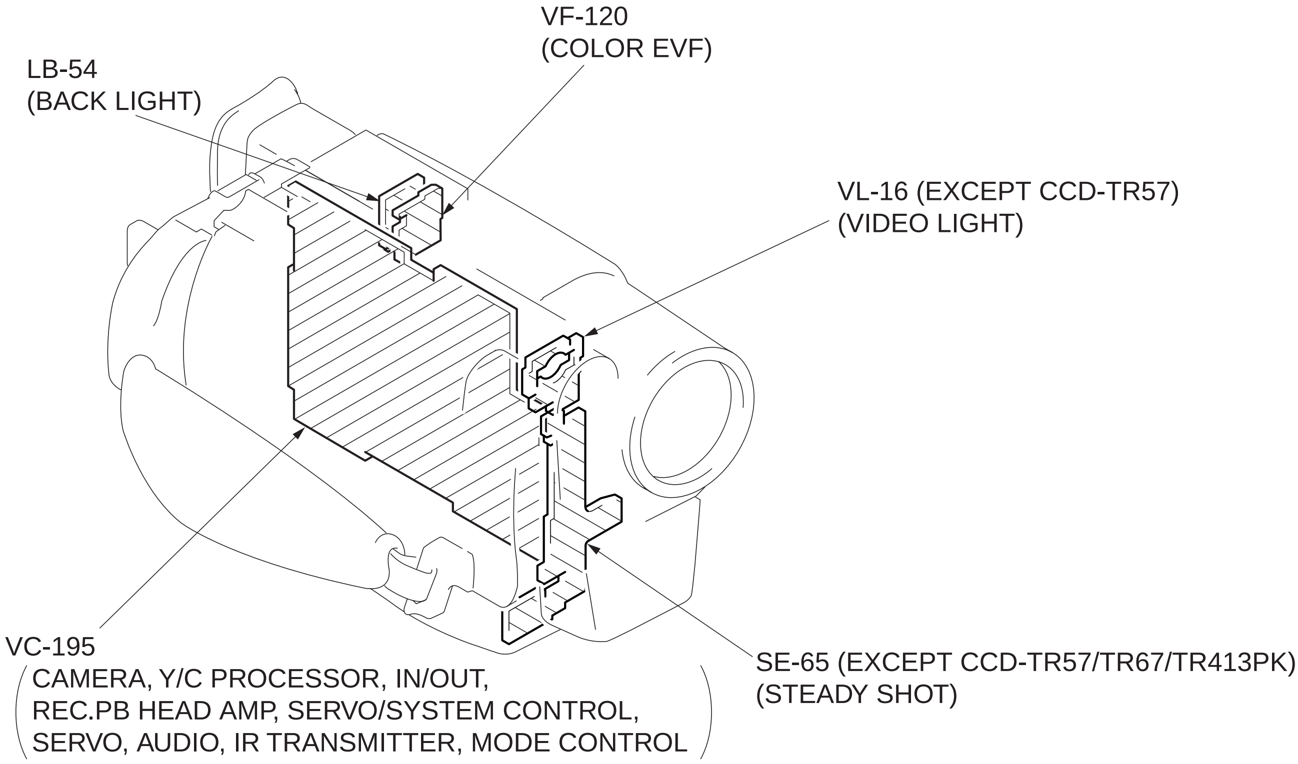
2-13. SERVICE POSITION

Preparation : *Refer to previous section "DISASSEMBLY", and connect as shown in the figure after each parts has been removed.*




2-14. CIRCUIT BOARDS LOCATION




SECTION 3
BLOCK DIAGRAMS

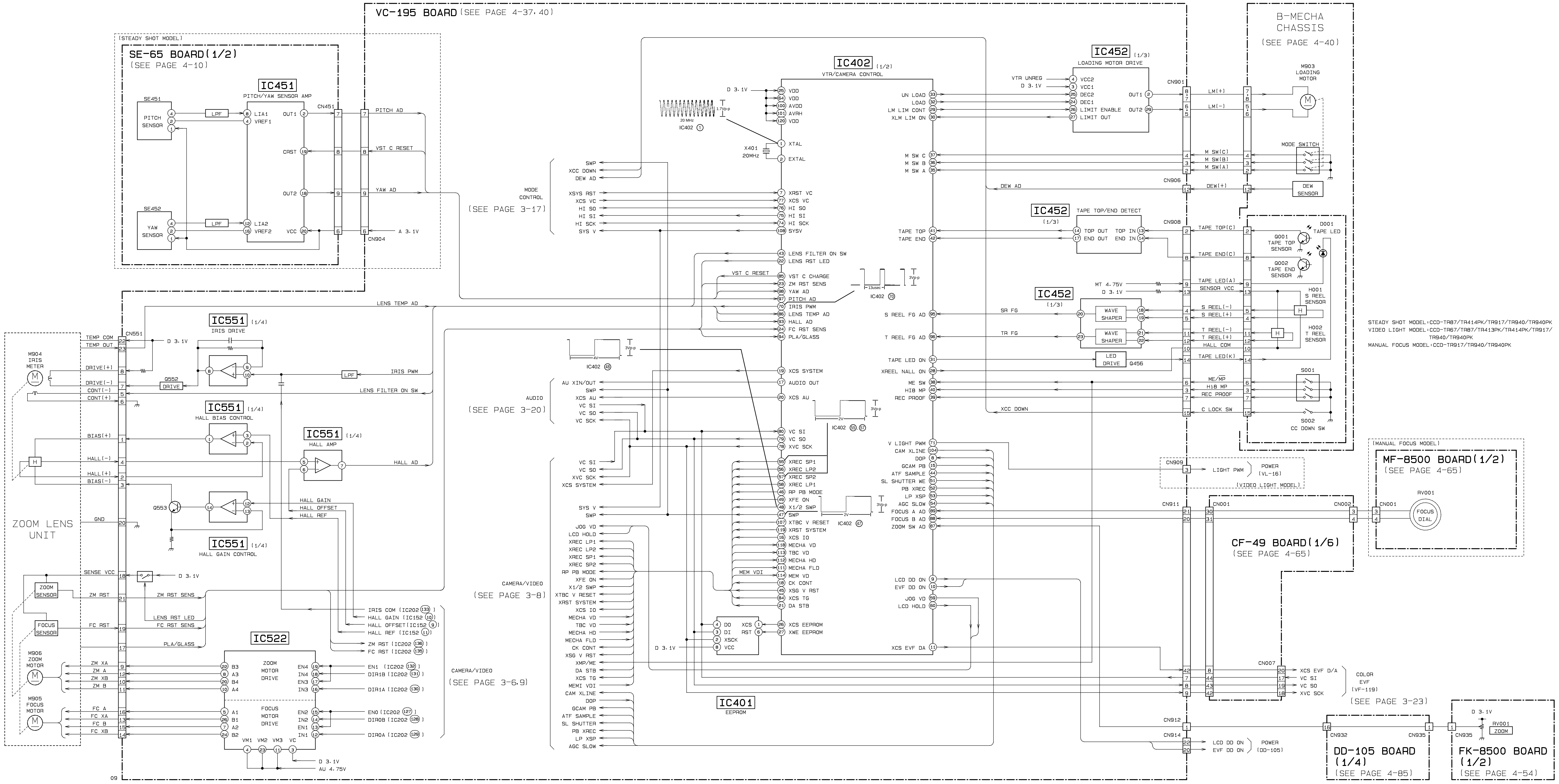
3-1. OVERALL BLOCK DIAGRAM



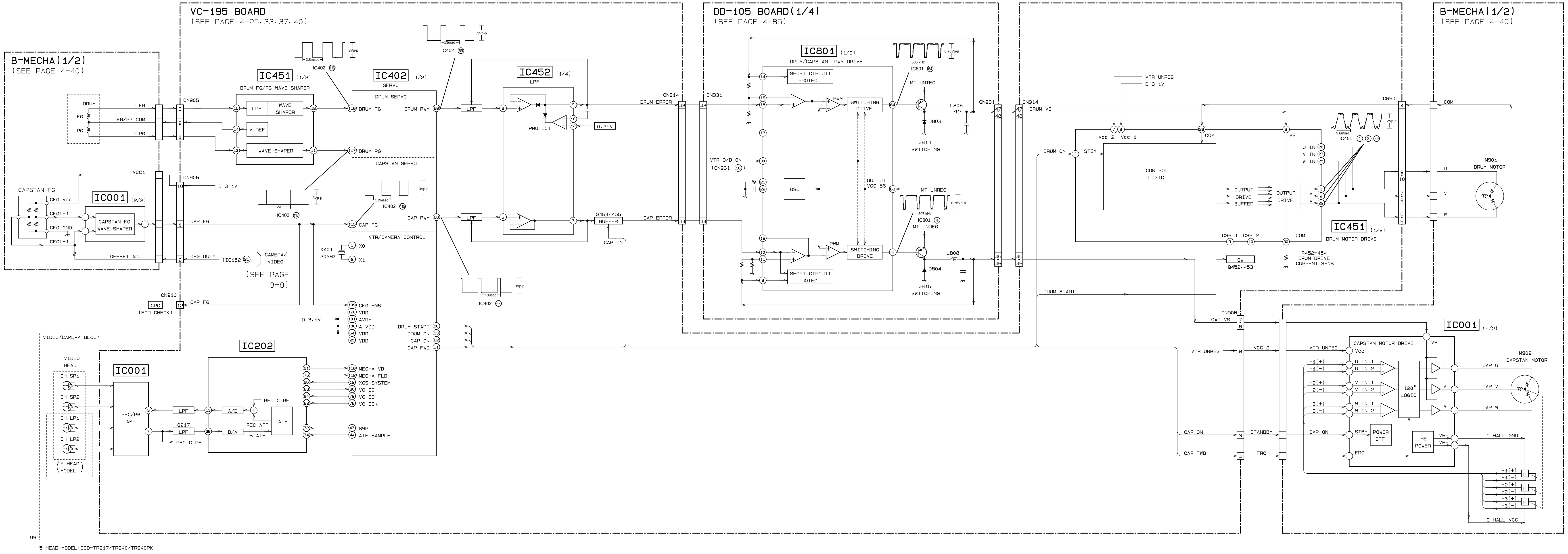
3-2. CAMERA/VIDEO 1 BLOCK DIAGRAM



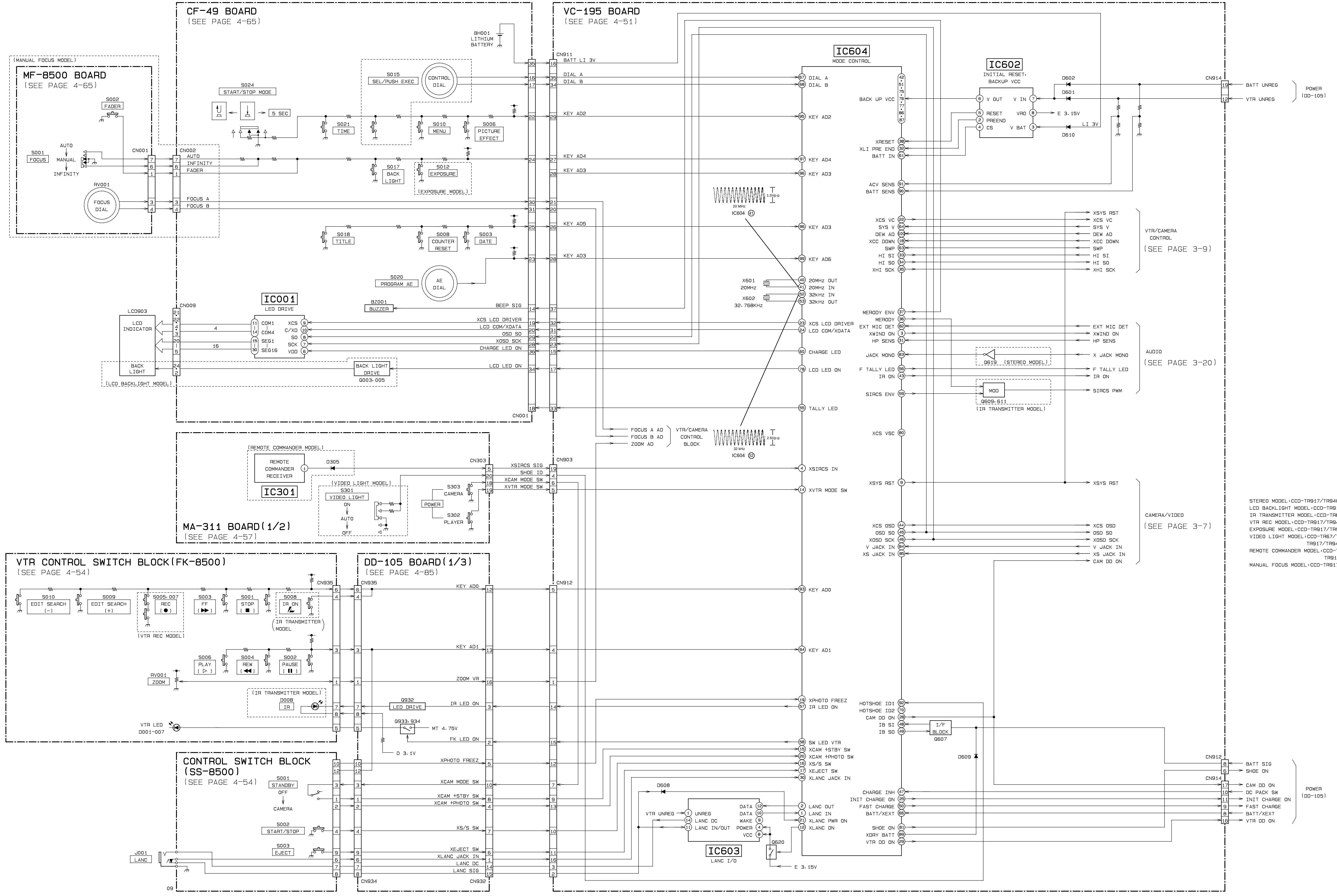
3-3. VTR/CAMERA CONTROL BLOCK DIAGRAM



3-4. SERVO BLOCK DIAGRAM


3-5. MODE CONTROL BLOCK DIAGRAM

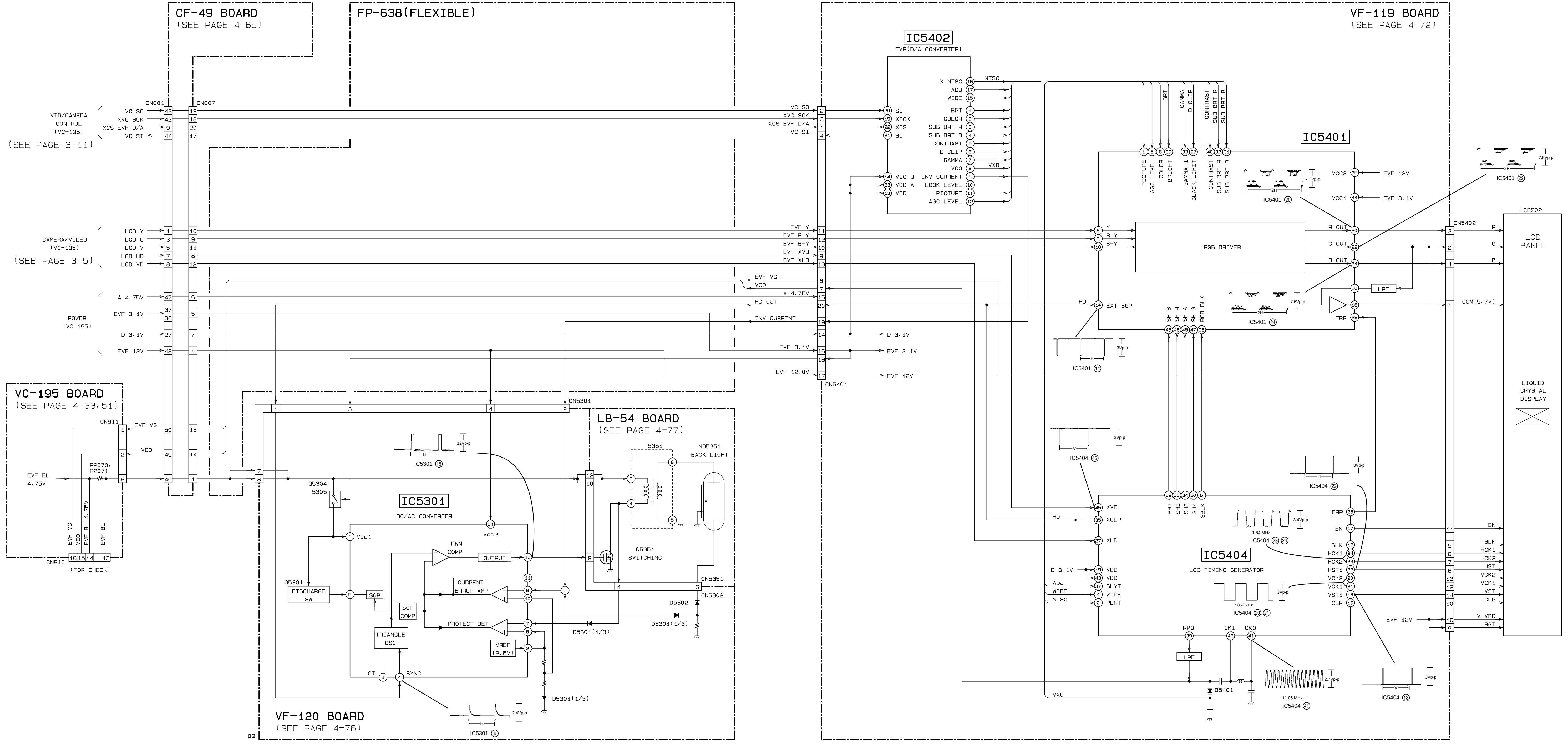


STEREO MODEL:CCD-TR917/TR940/TR940PK
LCD BACKLIGHT MODEL:CCD-TR917/TR940/TR940PK
IR TRANSMITTER MODEL:CCD-TR87/TR414PK/TR917/TR940/TR940PK
VTR REC MODEL:CCD-TR917/TR940/TR940PK
EXPOSURE MODEL:CCD-TR917/TR940/TR940PK
VIDEO LIGHT MODEL:CCD-TR67/TR87/TR413PK/TR414PK/
TR917/TR940/TR940PK
REMOTE COMMANDER MODEL:CCD-TR67/TR87/TR413PK/TR414PK/
TR917/TR940/TR940PK
MANUAL FOCUS MODEL:CCD-TR917/TR940/TR940PK

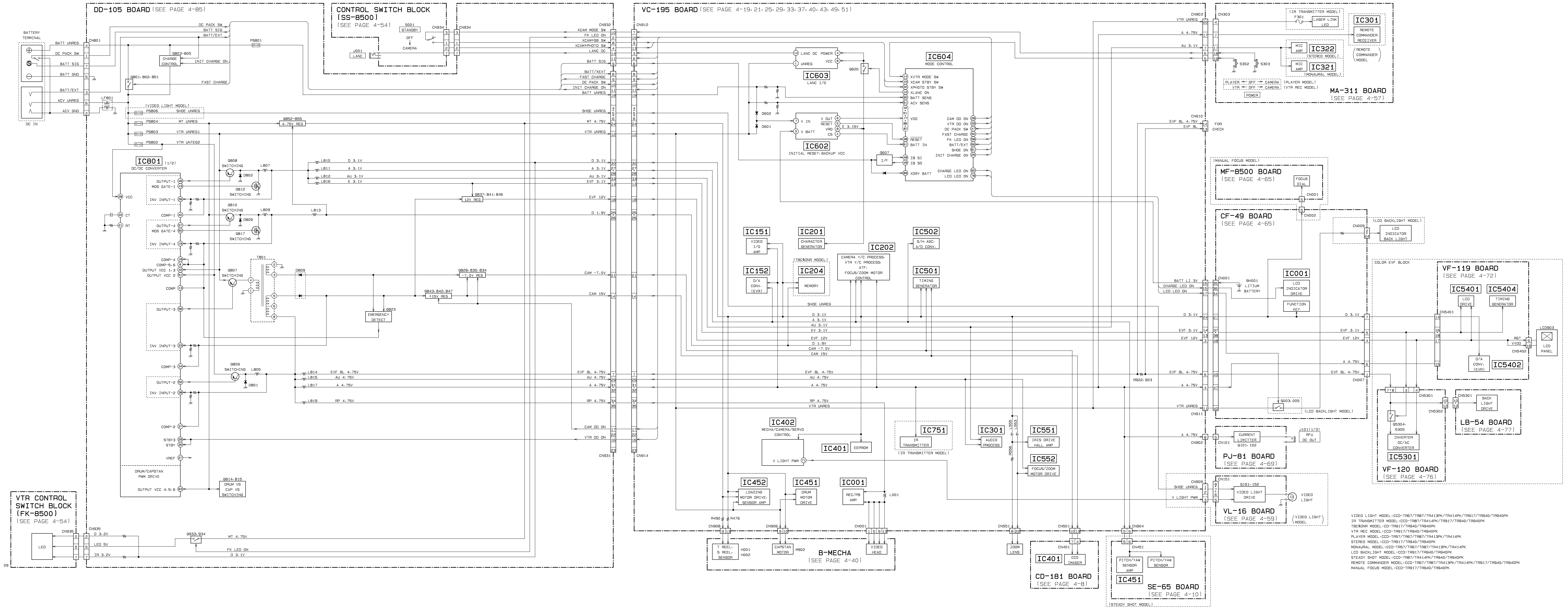
3-6. AUDIO BLOCK DIAGRAM



3-7. COLOR EVF BLOCK DIAGRAM

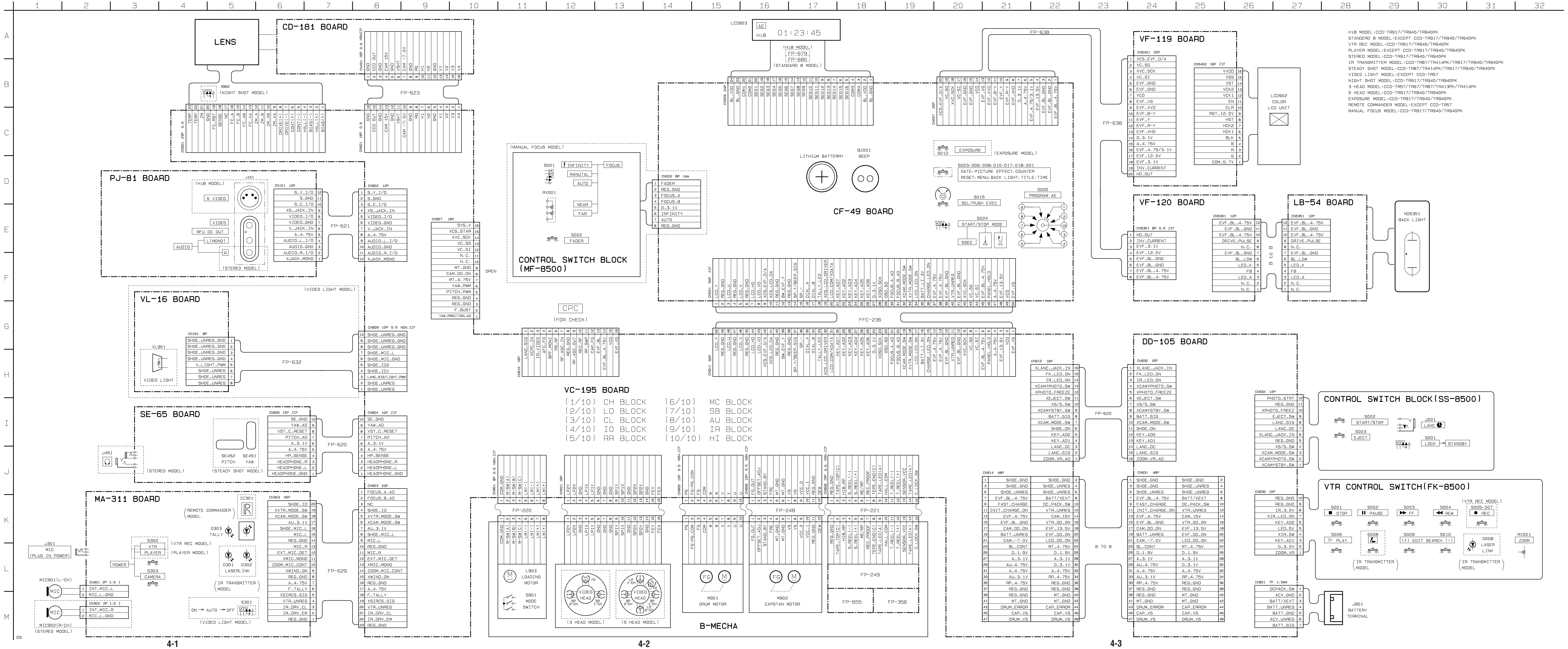


3-8. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



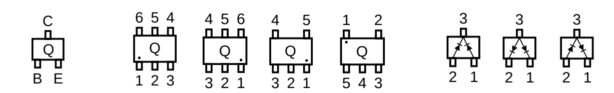
FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- : Pattern from the side which enable seeing. (The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.
- Through hole is omitted.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.

Transistor Diode



- **For schematic diagrams.**
- All capacitors are in µF unless otherwise noted. pF: µµF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistor are 1/16W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ.
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example C541 L452
22U 10UH
TA A 2520

Kinds of capacitor — Temperature characteristics — External dimensions (mm)

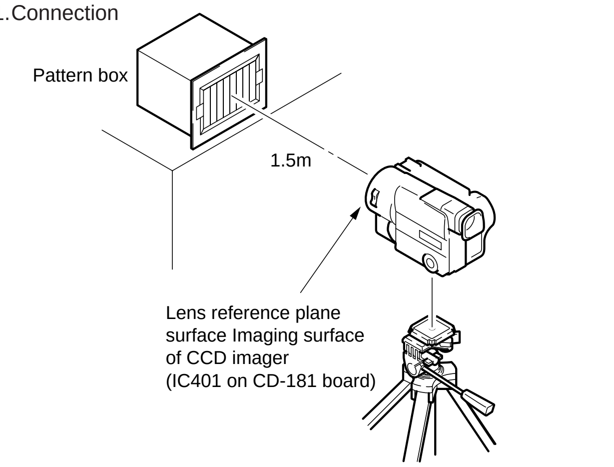
- Constants of resistors, capasitors, ICs and etc with XX indicate tha they are not used. In such cases, the unused circuits may be indicated.
- Parts with ☆ differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → EDIT PB/XREC → PB/REC
- : non flammable resistor.
- : fusible resistor.
- : panel designation.
- : B+ Line
- : B– Line
- : IN/OUT direction of (+, –) B LINE.
- : adjustment for repair.
- Circled numbers refer to waveforms.

The components identified by mark ⚠or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**
- The object is color bar chart of pattern box.
- Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

1.Connection



2.Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

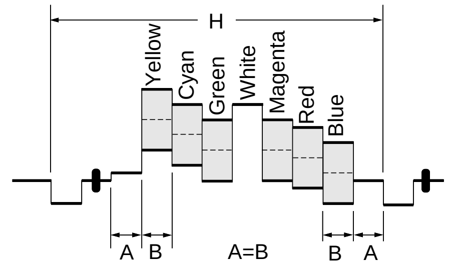


Fig. a (Video output terminal output waveform)

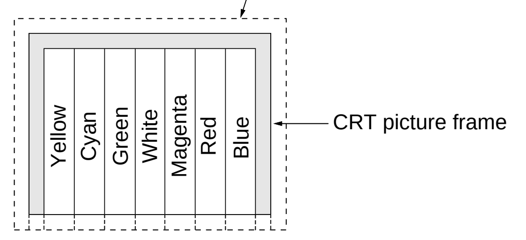
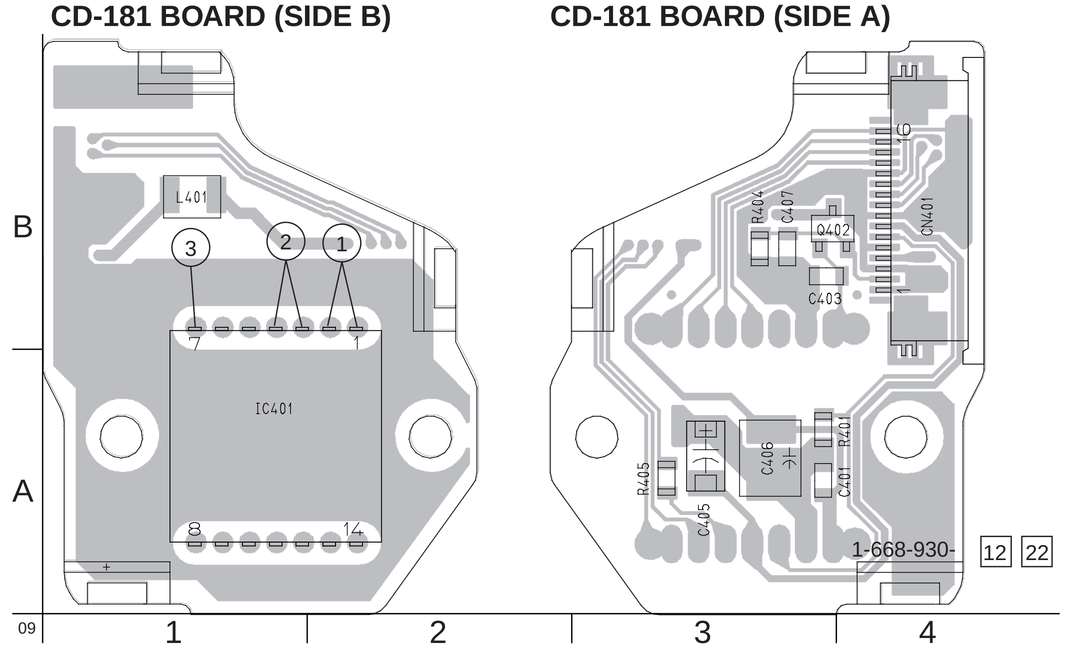


Fig. b (Picture on monitor TV)

CD-181 (CCD IMAGER) PRINTED WIRING BOARD

– Ref No. CD-181 BOARD: 3,000 series –

CD-181 BOARD (SIDE B) **CD-181 BOARD (SIDE A)**



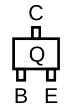
CD-181 BOARD

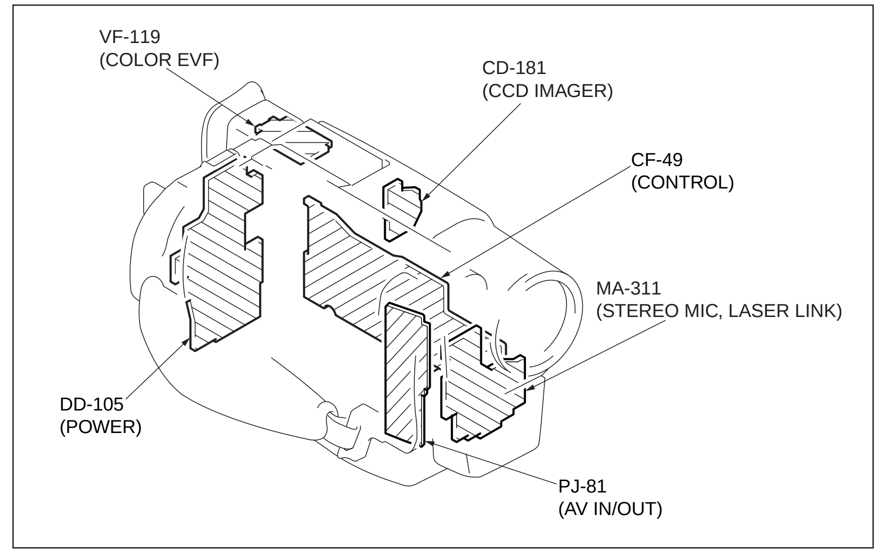
C401	A-3
C403	B-3
C405	A-3
C406	A-3
C407	B-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	B-3
R401	A-3
R404	B-3
R405	A-3

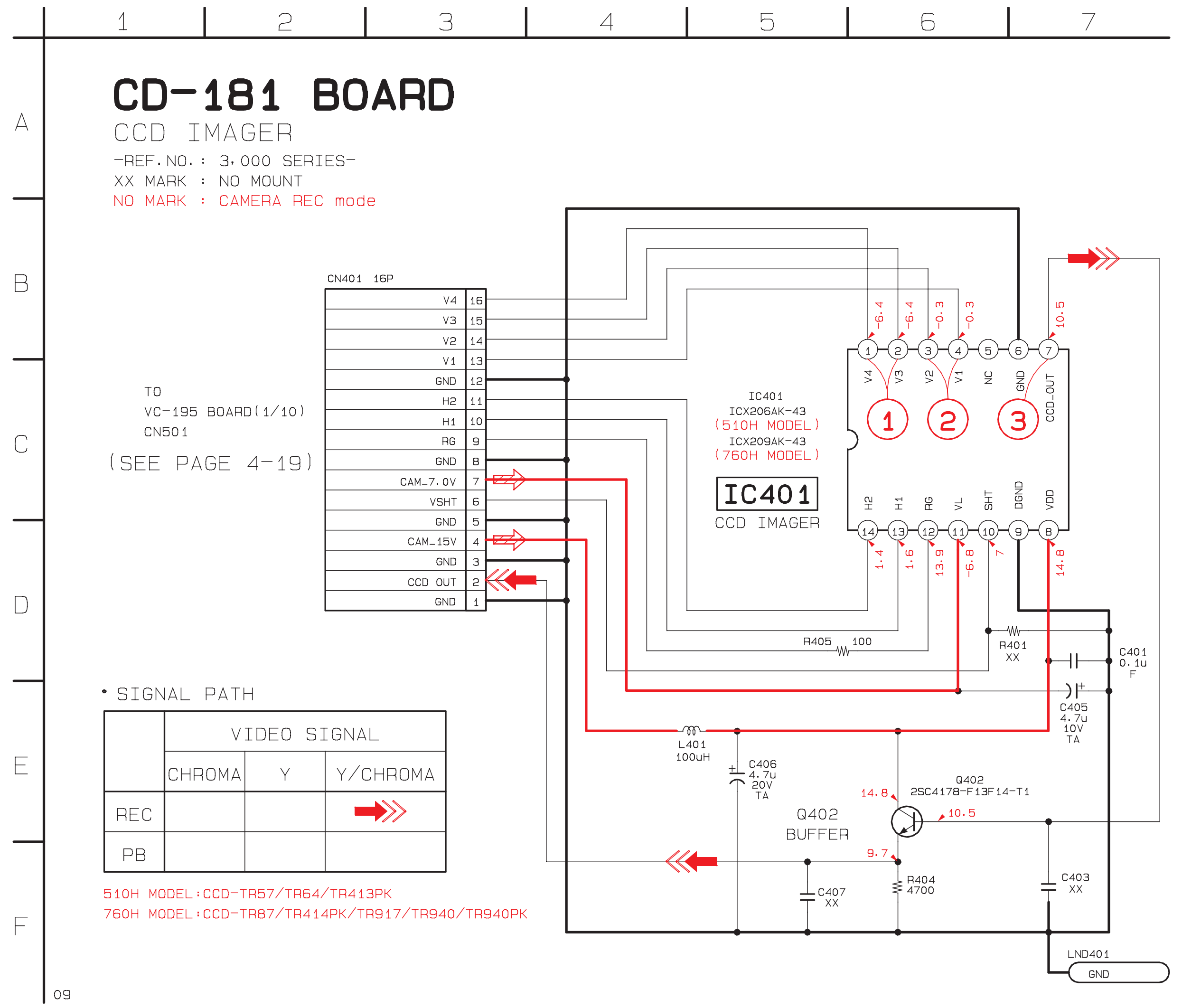
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

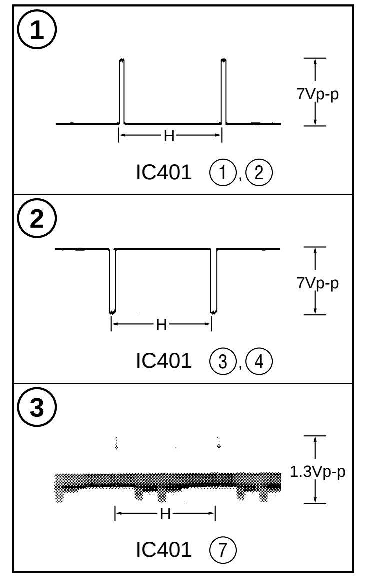
- Chip transistor







CD-181 BOARD
CAMERA REC



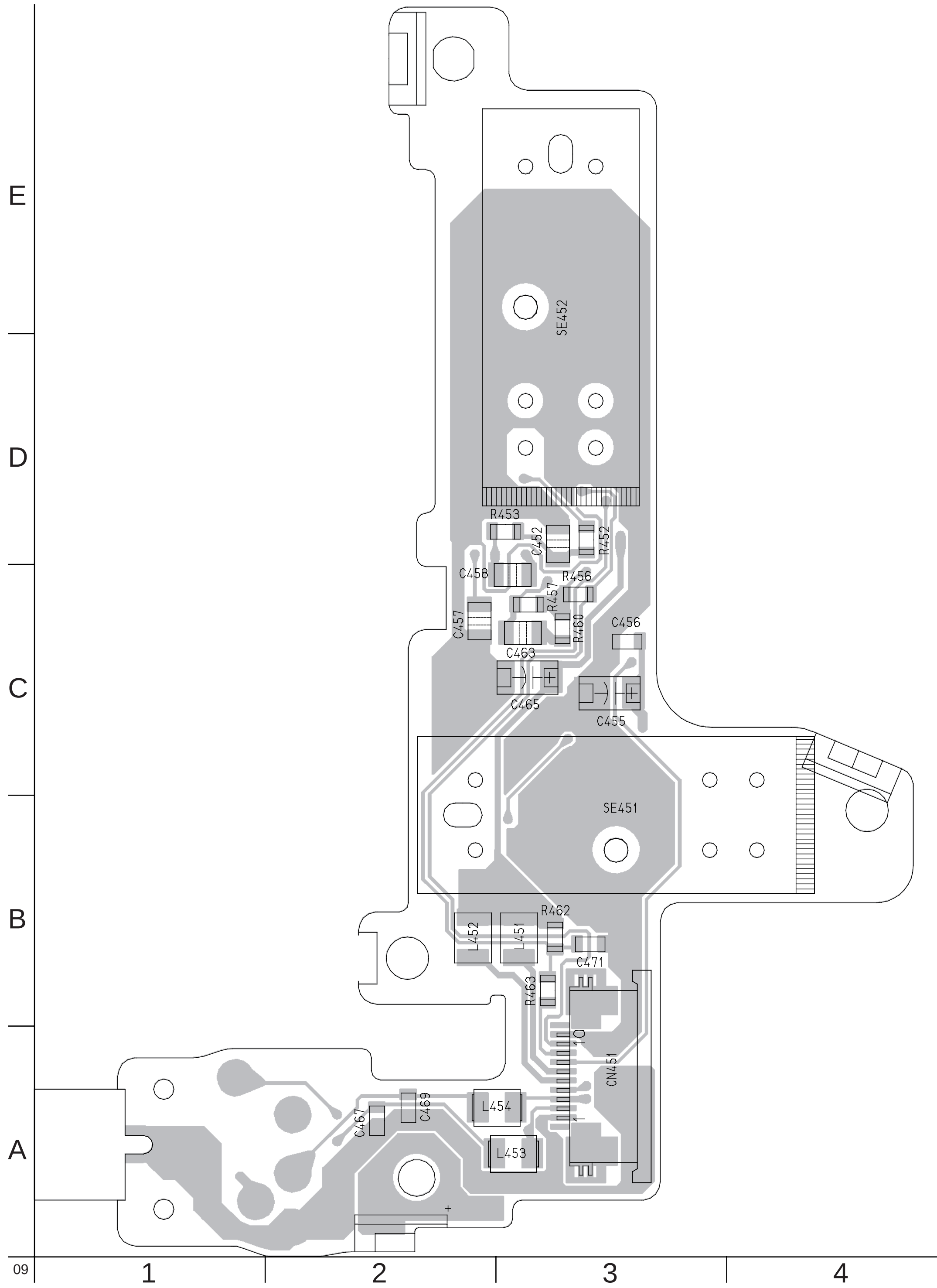
Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-181 board supplied as the repair parts. When replacing the CD-181 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure. Also, prevent the receiving light section from dust attached and strong light.

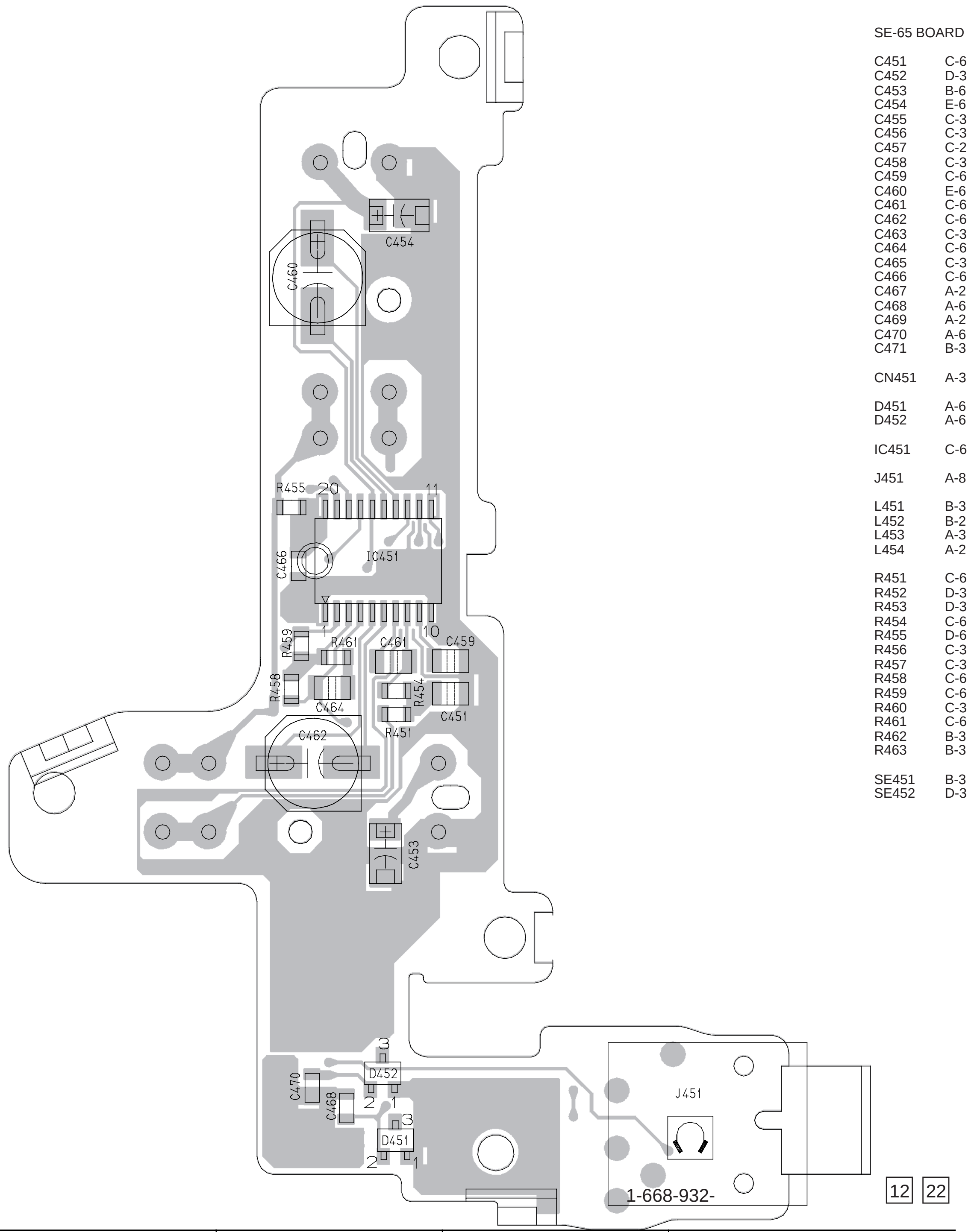
SE-65 (STEADY SHOT) PRINTED WIRING BOARD

– Ref No. SE-65 BOARD: 3,000 series –

SE-65 BOARD (SIDE B)

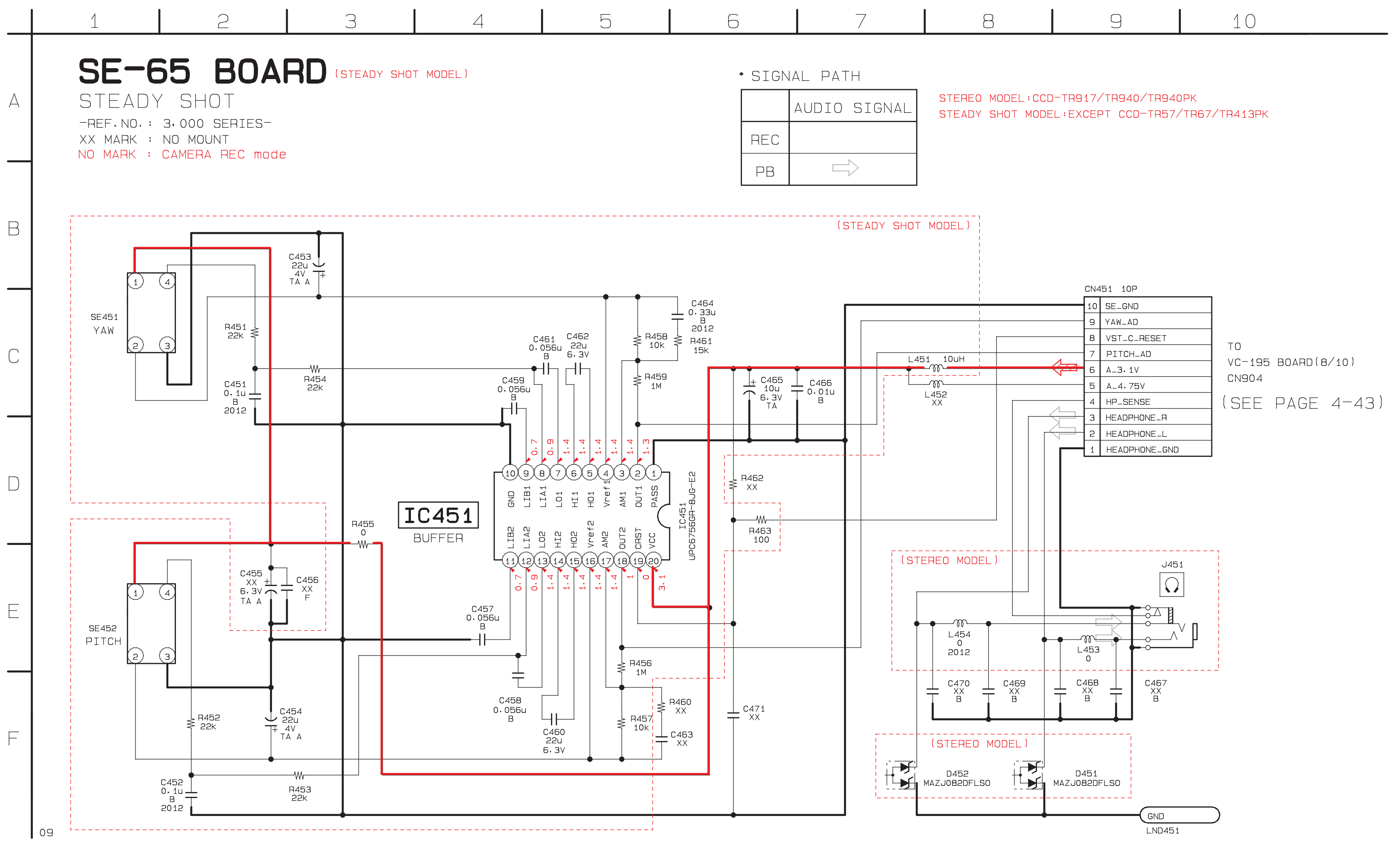


SE-65 BOARD (SIDE A)



SE-65 BOARD

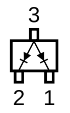
C451	C-6
C452	D-3
C453	B-6
C454	E-6
C455	C-3
C456	C-3
C457	C-2
C458	C-3
C459	C-6
C460	E-6
C461	C-6
C462	C-6
C463	C-3
C464	C-6
C465	C-3
C466	C-6
C467	A-2
C468	A-6
C469	A-2
C470	A-6
C471	B-3
CN451	A-3
D451	A-6
D452	A-6
IC451	C-6
J451	A-8
L451	B-3
L452	B-2
L453	A-3
L454	A-2
R451	C-6
R452	D-3
R453	D-3
R454	C-6
R455	D-6
R456	C-3
R457	C-3
R458	C-6
R459	C-6
R460	C-3
R461	C-6
R462	B-3
R463	B-3
SE451	B-3
SE452	D-3

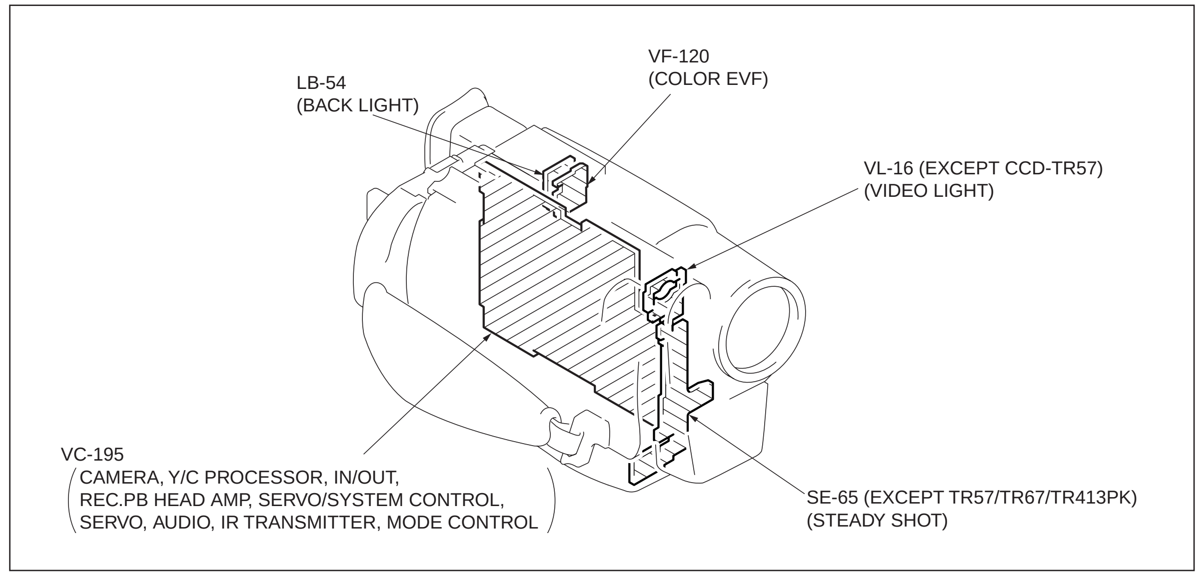


- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip diode





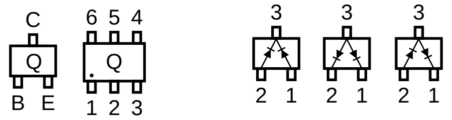
VC-195 BOARD
(SIDE B)

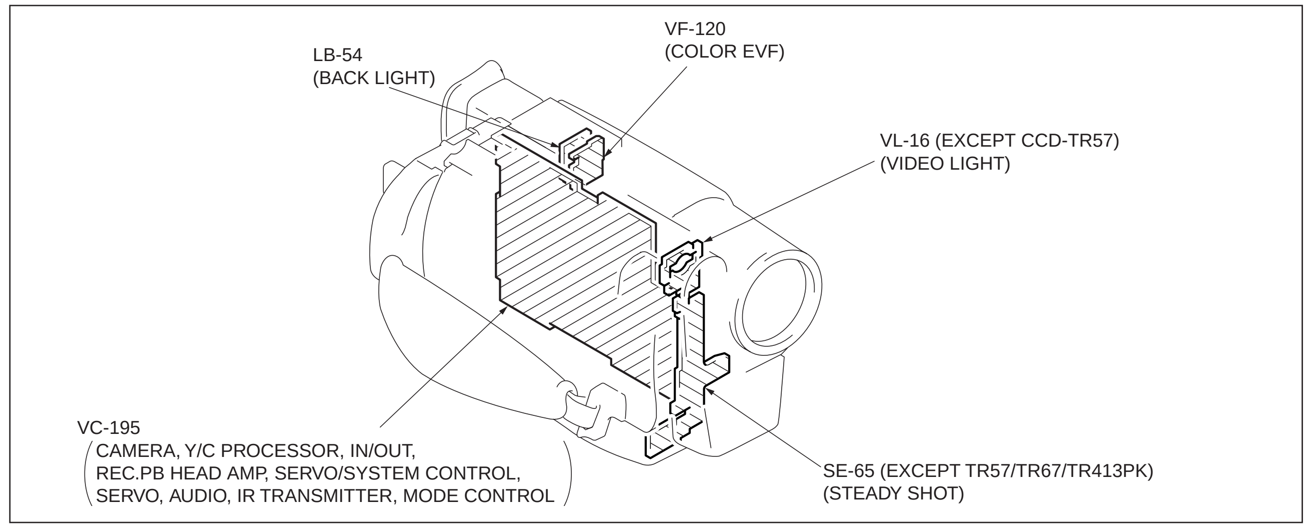
C002	A-5	C213	D-5	C481	A-1	C774	A-8	L156	C-7	Q454	A-1	R112	C-7	R428	B-2	R628	E-2	R773	B-8
C003	A-5	C217	D-4	C482	A-2	C775	A-8	L201	D-3	Q455	A-1	R152	D-8	R429	B-1	R629	F-1	R774	B-9
C008	A-4	C218	D-4	C483	A-2	C776	B-8	L202	D-4	Q551	G-7	R154	D-8	R430	B-1	R630	F-2	R775	A-8
C009	B-5	C227	D-5	C484	A-2	C777	A-8	L203	D-6	Q607	F-2	R157	D-8	R432	C-2	R631	G-2	R921	B-1
C011	B-5	C229	E-5	C485	A-1	C778	B-9	L204	D-4	Q619	E-3	R179	D-8	R433	C-2	R632	G-1	R922	D-1
C012	B-5	C232	D-3	C504	E-6	C781	B-8	L205	D-6	Q620	F-2	R180	D-8	R434	C-2	R633	E-2	R923	D-1
C013	B-6	C233	D-5	C505	E-6			L206	D-3	Q705	F-7	R183	E-8	R452	A-3	R634	E-2	R924	D-1
C014	B-6	C234	D-5	C506	E-7	CN904	A-9	L207	E-4			R184	E-8	R453	A-3	R635	E-2	R925	D-1
C015	B-5	C235	D-3	C507	E-6	CN907	D-9	L209	E-4	R001	A-6	R202	D-3	R454	A-3	R636	E-2	R926	G-7
C016	B-5	C236	D-3	C508	E-6	CN910	D-1	L402	C-2	R002	A-6	R203	D-4	R455	A-3	R637	G-2	R927	G-7
C017	B-5	C239	E-4	C509	E-7			L501	E-6	R008	A-4	R204	D-3	R456	A-3	R638	G-2		
C019	B-5	C241	E-3	C510	E-6	D001	C-4	L552	F-7	R009	A-5	R205	D-3	R457	A-3	R639	G-2	RB12	C-8
C020	B-6	C243	F-3	C514	E-5	D201	D-3	L553	G-7	R010	B-6	R206	D-4	R459	A-3	R640	F-2	RB151	D-8
C022	B-5	C244	F-3	C515	E-5	D202	D-3	L602	E-3	R011	B-5	R208	D-3	R460	A-3	R641	F-3		
C025	B-6	C245	D-4	C518	F-5	D371	E-8	L701	F-7	R012	B-5	R210	D-3	R461	A-3	R642	F-2	TH401	B-4
C038	B-6	C246	D-4	C553	G-6	D502	F-5	L702	F-7	R013	B-6	R211	D-3	R462	A-3	R643	F-2		
C040	B-6	C247	D-4	C554	G-7	D601	E-2	L704	F-8	R014	B-4	R212	D-6	R463	A-3	R644	F-2	X151	D-7
C042	B-5	C249	E-4	C556	G-7	D602	E-2	L751	B-8	R015	B-5	R214	D-5	R467	A-2	R645	E-2	X401	B-3
C043	B-5	C252	F-3	C557	G-5	D604	F-2	L752	B-8	R016	B-6	R215	D-5	R468	A-2	R646	F-2	X501	F-5
C048	B-6	C301	B-9	C558	G-5	D608	F-1	L753	B-8	R017	B-6	R216	D-5	R469	A-2	R647	F-2		
C050	C-6	C312	C-9	C559	F-7	D609	F-2			R018	B-5	R217	E-4	R470	A-2	R648	F-2		
C051	B-5	C371	E-8	C563	F-6	D611	E-2	Q003	A-5	R019	B-5	R223	D-3	R471	A-2	R649	F-2		
C054	B-5	C372	E-8	C564	F-7	D910	G-1	Q004	A-6	R020	B-4	R224	D-3	R472	A-3	R651	F-2		
C056	B-5	C378	F-7	C566	G-7			Q005	A-5	R021	B-5	R226	D-4	R473	A-1	R652	F-3		
C058	B-6	C380	E-7	C569	G-6	FB202	E-4	Q006	A-5	R023	B-6	R240	D-4	R475	A-1	R653	F-3		
C060	C-5	C381	E-7	C572	F-6	FB203	E-4	Q007	A-6	R025	B-6	R244	D-3	R477	A-2	R654	F-3		
C066	B-6	C382	F-8	C603	F-1	FB204	F-3	Q008	B-6	R029	B-5	R246	D-3	R479	A-2	R655	F-2		
C067	C-6	C383	E-8	C607	E-2	FB205	F-3	Q009	B-6	R031	B-5	R247	D-3	R480	A-2	R662	E-3		
C068	C-6	C384	E-8	C610	F-2	FB206	D-4	Q010	B-5	R040	B-5	R248	E-3	R481	A-2	R663	F-3		
C069	C-5	C385	E-8	C611	F-2	FB501	E-5	Q011	B-5	R041	B-5	R249	E-3	R482	A-2	R665	F-3		
C070	C-6	C387	F-8	C613	E-1	FB502	E-6	Q012	B-5	R042	B-5	R250	F-3	R483	A-1	R678	F-3		
C072	C-6	C388	E-8	C625	E-2	FB503	E-5	Q016	B-5	R047	B-5	R254	D-1	R484	A-1	R686	E-2		
C074	C-6	C402	C-1	C626	E-2	FB504	E-5	Q017	B-6	R048	B-5	R255	E-5	R485	A-1	R687	E-2		
C076	C-5	C413	B-2	C627	F-2	FB505	E-5	Q018	C-5	R049	B-6	R257	D-4	R486	B-1	R689	F-3		
C077	C-5	C451	A-3	C630	F-3	FB506	E-5	Q019	C-6	R050	B-6	R304	B-9	R487	A-1	R690	F-2		
C080	C-5	C452	A-3	C634	F-3			Q021	B-6	R051	B-6	R305	C-9	R504	E-6	R691	E-2		
C083	C-5	C453	A-3	C636	F-2	IC152	C-8	Q023	C-6	R056	B-6	R329	A-6	R505	E-6	R692	F-1		
C086	C-4	C454	A-3	C704	F-7	IC201	E-5	Q025	C-6	R058	B-6	R330	A-7	R508	E-5	R704	G-8		
C087	C-4	C455	A-3	C714	F-8	IC204	F-4	Q026	C-6	R066	B-6	R371	D-8	R510	E-5	R705	G-7		
C090	C-6	C456	A-4	C715	F-8	IC371	E-7	Q030	C-5	R067	C-6	R372	D-8	R511	E-5	R716	G-8		
C152	D-8	C457	A-3	C751	B-6	IC401	C-2	Q031	C-5	R068	C-7	R373	D-9	R512	F-5	R717	F-8		
C157	E-8	C458	A-4	C752	A-7	IC403	B-2	Q032	C-7	R069	C-5	R374	D-8	R527	E-5	R718	F-7		
C158	D-8	C459	A-4	C753	A-7	IC404	B-2	Q035	C-4	R069	C-6	R375	D-8	R552	G-6	R719	F-8		
C159	C-8	C460	A-4	C754	A-7	IC451	A-4	Q037	C-4	R070	C-6	R376	D-8	R555	G-7	R723	F-7		
C174	D-8	C461	A-3	C755	A-7	IC452	A-2	Q038	C-5	R076	C-6	R377	E-8	R563	G-5	R752	A-7		
C175	D-8	C462	A-4	C756	A-7	IC501	E-6	Q039	C-5	R077	C-6	R378	E-8	R564	G-6	R753	A-7		
C176	D-8	C463	A-3	C757	A-7	IC552	G-6	Q041	B-5	R078	C-6	R379	E-7	R566	G-5	R754	B-6		
C182	D-8	C464	B-3	C758	A-8	IC602	E-2	Q042	C-4	R079	C-6	R382	E-8	R567	G-6	R755	B-6		
C183	D-8	C465	B-4	C759	B-6	IC751	A-8	Q151	D-8	R080	C-6	R383	E-8	R570	F-5	R757	A-7		
C190	D-8	C466	B-3	C760	B-6			Q202	D-3	R083	C-5	R384	E-7	R579	G-6	R758	A-7		
C191	C-7	C467	B-3	C761	B-8	L002	B-4	Q203	D-3	R084	C-5	R385	F-8	R582	G-6	R759	A-7		
C192	C-7	C468	B-3	C762	B-8	L003	B-4	Q204	D-5	R087	C-5	R386	F-8	R603	F-2	R760	B-8		
C202	D-3	C469	B-4	C763	B-8	L007	C-6	Q205	E-5	R088	C-5	R386	F-8	R604	F-2	R761	A-8		
C203	D-3	C470	B-4	C764	B-8	L008	C-6	Q208	D-6	R090	C-5	R388	E-8	R608	F-2	R762	A-8		
C204	D-4	C471	B-4	C765	A-8	L010	C-6	Q217	D-4	R094	C-5	R389	E-8	R612	E-1	R763	A-8		
C205	E-4	C473	A-1	C766	A-8	L011	C-6	Q218	D-4	R095	C-7	R403	C-2	R618	F-1	R764	B-8		
C206	D-4	C474	A-2	C767	B-8	L014	C-5	Q306	B-9	R097	C-5	R404	C-3	R619	F-1	R765	B-8		
C207	D-3	C475	A-2	C768	B-8	L015	C-5	Q307	C-9	R100	C-5	R415	B-2	R620	F-1	R766	A-8		
C208	D-3	C476	A-2	C769	A-8	L017	C-5	Q311	A-6	R104	C-5	R416	B-2	R621	F-1	R767	B-8		
C209	D-6	C477	A-2	C770	A-8	L019	B-6	Q312	A-7	R105	C-6	R417	B-2	R622	F-2	R768	A-8		
C210	D-6	C478	A-2	C771	B-8	L152	D-8	Q451	B-3	R106	C-6	R418	B-2	R624	F-1	R770	A-8		
C211	D-3	C479	A-2	C772	A-8	L153	D-7	Q452	B-4	R109	B-4	R426	C-2	R625	F-2	R771	A-8		
C212	D-3	C480	A-2	C773	B-8	L154	D-7	Q453	B-4	R110	B-5	R427	B-2	R627	E-2	R772	A-8		

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor
- Chip diode

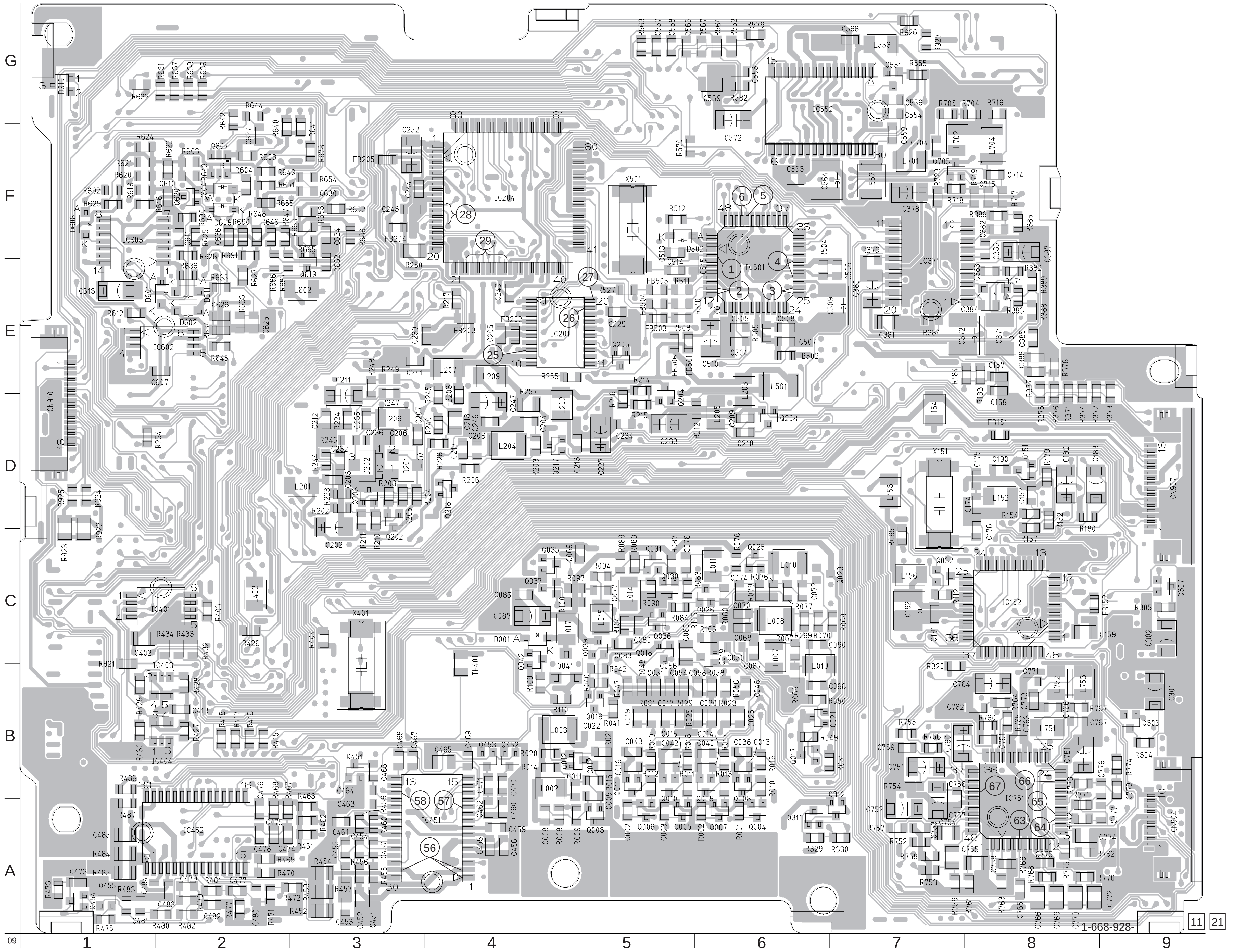




VC-195 (CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, IR TRANSMITTER, MODE CONTROL) PRINTED WIRING BOARD

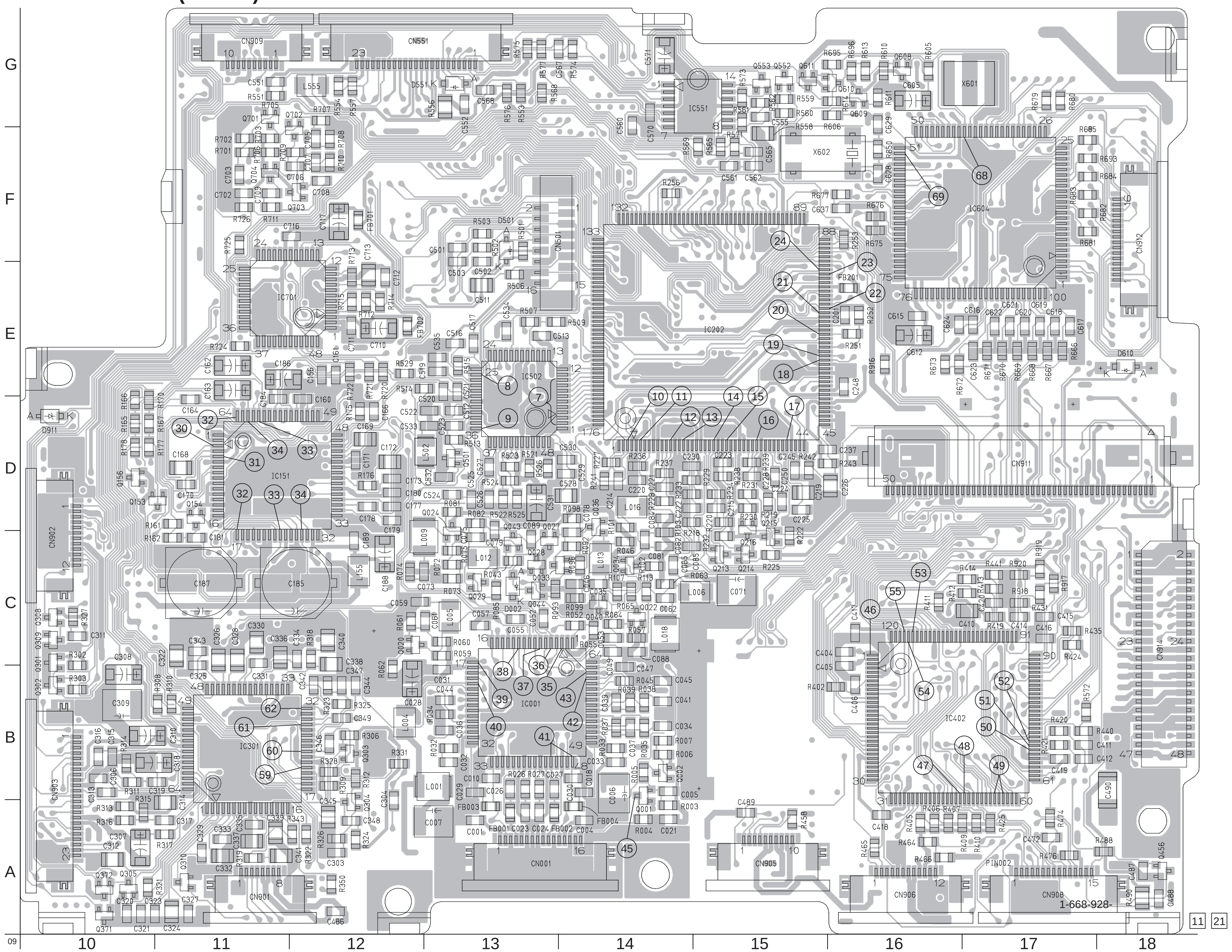
– Ref No. VC-195 BOARD: 1,000 series –

VC-195 BOARD (SIDE B)



CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, IR TRANSMITTER, MODE CONTROL
VC-195 (SIDE B)

VC-195 BOARD (SIDE A)



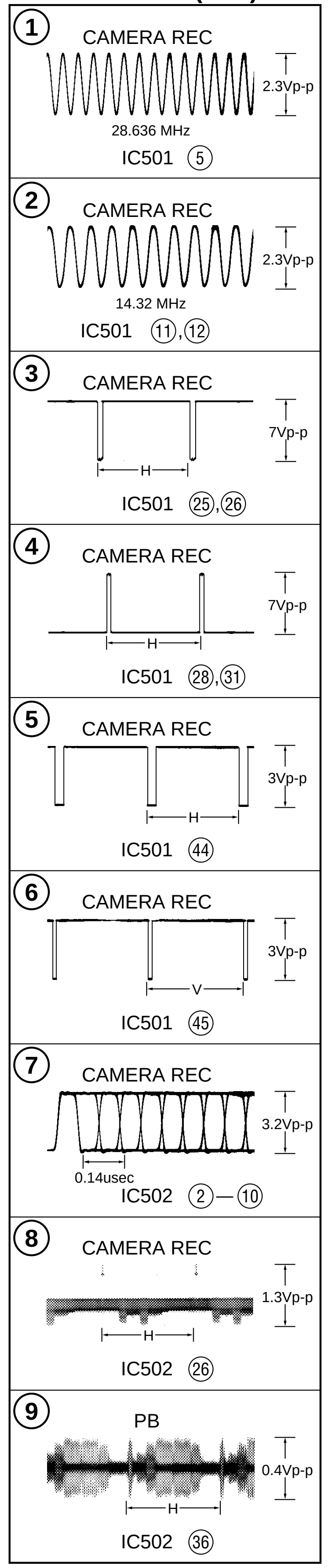
VC-195 BOARD
(SIDE A)

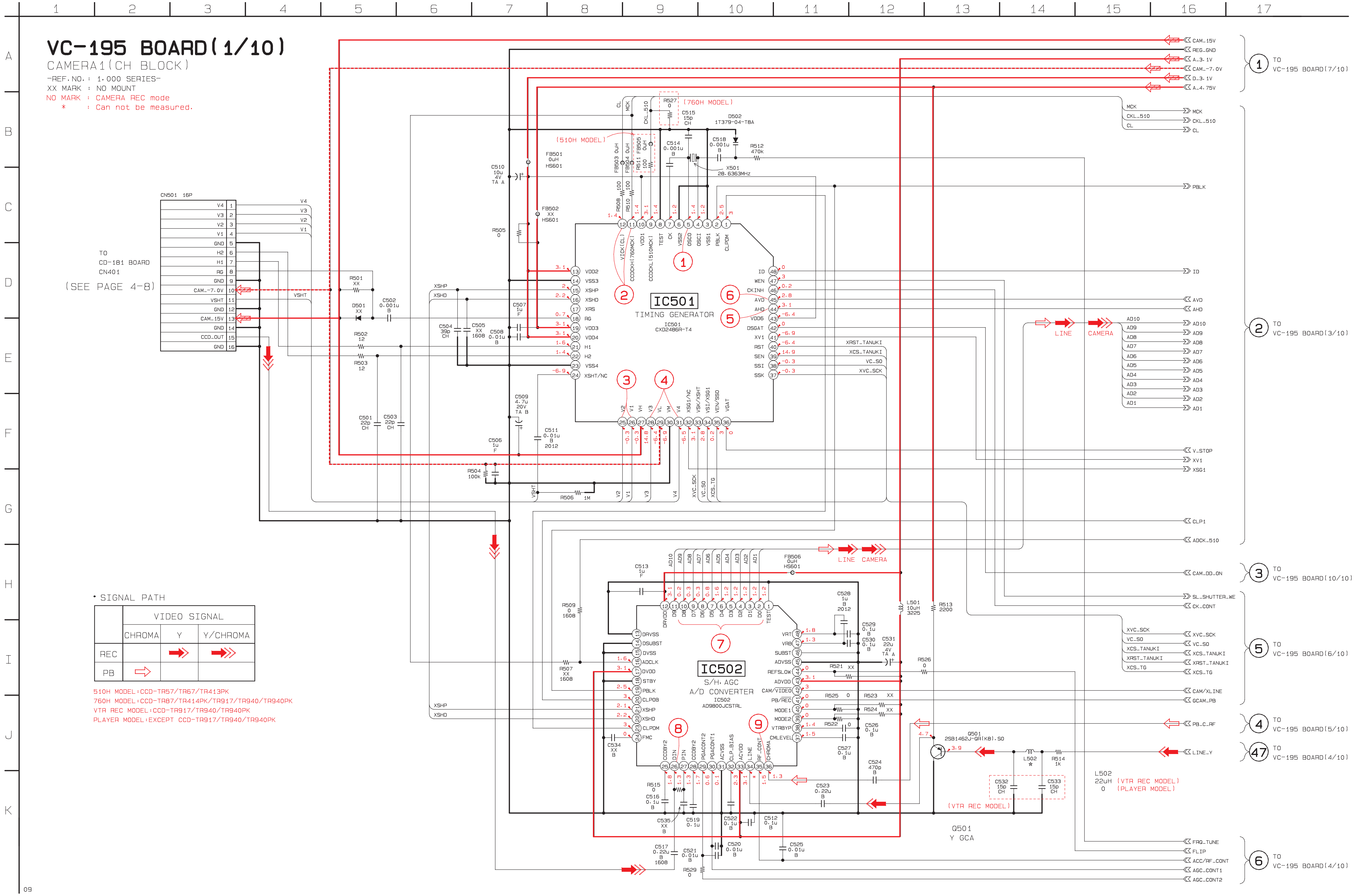
C001	A-13
C004	A-14
C004	B-13
C005	B-14
C006	B-14
C007	A-13
C010	B-13
C018	B-14
C021	A-14
C023	A-13
C024	A-13
C026	B-13
C027	B-13
C028	B-12
C029	B-13
C030	B-14
C031	B-13
C032	B-13
C033	B-14
C034	B-14
C035	C-14
C036	B-13
C037	B-14
C039	B-14
C041	B-14
C045	B-14
C046	C-14
C047	B-14
C049	C-14
C052	C-13
C053	C-14
C055	C-13
C057	C-13
C059	C-12
C061	C-13
C062	C-14
C065	C-14
C071	C-15
C073	C-13
C075	C-13
C078	C-14
C079	C-13
C081	C-14
C082	C-14
C084	D-14
C085	C-14
C088	C-14
C089	C-13
C156	E-12
C160	D-12
C161	E-12
C162	E-11
C163	E-11
C164	D-11
C166	D-12
C168	D-11
C169	D-12
C170	D-11
C171	D-12
C172	D-12
C173	D-12
C177	D-12
C178	D-12
C179	D-12
C180	D-12
C181	C-11
C184	D-11
C185	C-12
C186	E-11
C187	C-11
C188	C-12
C189	C-12
C201	E-16
C214	D-14
C215	D-15
C219	D-15
C220	D-14
C221	D-14
C222	D-14
C223	D-15
C224	D-15
C225	D-15
C226	D-16
C228	D-15
C230	D-14
C237	D-16
C245	D-15
C248	E-16
C250	D-15
C303	A-12
C304	A-12
C306	B-10
C307	A10
C308	B-10
C309	B-10
C310	B-10
C311	C-10
C312	A10
C313	B-10
C314	A-11
C315	B-10
C316	B-10
C317	A-11
C318	B-10
C319	B-11
C320	A10
C321	A10
C322	C-11
C323	A-11
C324	A-11
C324	A-12
C325	C-11
C326	C-11
C327	A-11
C328	C-11
C330	C-11
C331	C-11
C332	A-11
C333	A-11
C334	C-12
C335	A-11
C336	C-11
C337	A-11
C338	B-12
C339	A-11
C340	C-12
C341	A-11
C342	B-12
C343	C-11
C344	B-12
C345	A-12
C346	B-12
C347	B-12
C348	A-12
C349	B-12
C404	C-16
C405	B-16
C406	B-16
C410	C-17
C411	B-17
C412	B-17
C414	C-17
C415	C-17
C416	C-17
C417	C-16
C418	A-16
C419	B-17
C420	C-17
C472	A-17
C486	A-12
C487	A-18
C488	A-18
C489	A-15
C490	B-18
C501	F-13
C502	E-13
C503	E-13
C511	E-13
C512	D-13
C513	E-13
C516	E-13
C517	E-13
C519	E-13
C520	E-13
C521	E-13
C522	D-13
C523	D-13
C524	D-13
C525	D-13
C526	D-13
C527	D-13
C528	D-14
C529	D-14
C530	D-14
C531	D-13
C532	D-13
C533	D-13
C534	E-13
C535	E-13
C551	G-11
C552	G-13
C555	G-15
C560	F-14
C561	F-15
C562	F-15
C565	F-15
C567	G-14
C568	G-13
C570	G-14
C571	G-14
C604	F-17
C605	G-16
C612	E-16
C615	E-16
C616	E-17
C617	E-17
C618	E-17
C619	E-17
C620	E-17
C621	E-17
C622	E-17
C623	E-17
C624	E-16
C628	F-16
C629	F-16
C637	F-16
C702	F-11
C703	F-11
C705	F-12
C706	F-12
C707	F-12
C708	F-12
C709	F-11
C710	E-12
C711	E-12
C712	E-12
C713	E-12
C716	F-12
C717	F-12
CN001	A-13
CN501	F-14
CN551	G-12
CN901	A-11
CN902	C-10
CN903	B-10
CN905	A-15
CN906	A-16
CN908	A-17
CN909	G-11
CN911	D-17
CN912	F-18
CN914	B-18
D002	C-13
D501	F-13
D551	G-13
D610	E-18
D911	D-10
FB001	A-13
FB002	A-13
FB003	A-13
FB004	A-14
FB201	E-16
FB701	F-12
FB702	E-12
IC001	B-13
IC151	D-11
IC202	E-15
IC301	B-11
IC402	B-16
IC502	D-13
IC551	G-15
IC701	E-11
L001	B-13
L004	B-12
L005	C-13
L006	C-15
L009	C-13
L012	C-13
L013	C-14
L016	D-14
L018	C-14
L155	C-12
L502	D-13
L555	G-12
Q001	B-14
Q002	B-14
Q020	C-12
Q022	C-14
Q024	C-13
Q027	C-13
Q028	C-13
Q029	C-13
Q033	C-14
Q034	C-14
Q036	D-14
Q040	C-14
Q043	C-13
Q044	C-13
Q153	D-11
Q154	D-11
Q156	D-10
Q213	C-15
Q214	C-15
Q215	C-15
Q216	C-15
Q301	C-10
Q302	B-10
Q303	B-12
Q304	A-12
Q305	A10
Q308	C-10
Q309	C-10
Q310	A-11
Q329	A-11
Q371	A10
Q372	A10
Q456	A-18
Q501	D-13
Q553	G-15
Q608	G-16
Q609	G-16
Q610	G-16
Q611	G-15
Q701	G-11
Q702	F-12
Q703	F-12
Q704	F-11
R003	A-14
R004	A-14
R005	B-14
R006	B-14
R007	B-14
R026	B-13
R027	B-13
R032	B-13
R033	B-14
R034	B-13
R035	B-14
R037	B-14
R038	B-14
R039	B-14
R043	C-13
R045	B-14
R046	C-14
R052	C-14
R055	C-14
R057	C-14
R059	C-13
R060	C-13
R062	B-12
R063	C-14
R064	C-14
R065	C-14
R072	C-13
R073	C-13
R074	C-12
R075	C-13
R081	D-13
R082	D-13
R085	C-13
R092	C-14
R093	C-13
R096	C-14
R098	D-14
R099	C-14
R101	D-14
R102	C-14
R103	C-14
R107	C-14
R113	C-14
R161	D-11
R162	C-11
R165	D-10
R166	D-10
R167	D-10
R170	D-10
R175	D-12
R176	D-12
R177	D-10
R178	D-10
R218	D-14
R219	D-15
R220	D-15
R222	C-15
R225	C-15
R227	D-14
R228	D-14
R229	D-14
R230	D-15
R231	D-15
R232	C-15
R233	D-14
R234	D-15
R236	D-14
R237	D-14
R238	D-15
R239	D-15
R241	D-14
R242	D-15
R243	D-16
R251	E-16
R252	E-16
R253	F-16
R256	F-14
R302	C-10
R303	B-10
R306	B-12
R308	B-11
R309	B-12
R310	B-11
R311	B-10
R312	B-12
R313	A10
R314	B-10
R315	A10
R316	A10
R317	A-11
R318	C-12
R319	A-11
R321	A10
R322	A-12
R323	B-12
R325	B-12
R326	A-12
R327	C-1
R328	B-12
R331	B-12
R343	A-12
R350	A-12
R402	B-16
R405	A-16
R406	A-16
R407	A-16
R409	A-16
R410	A-17
R411	C-16
R412	C-17
R413	C-17
R414	C-17
R419	C-17
R420	B-17
R421	B-17
R424	C-17
R425	A-17
R431	C-17
R435	C-17
R440	B-17
R441	C-17
R458	A-15
R464	A-16
R465	A-16
R466	A-16
R474	A-17
R476	A-17
R488	A-18
R490	A-18
R501	F-13
R502	F-13
R503	F-13
R507	E-13
R509	E-13
R513	D-13
R514	E-13
R521	D-13
R522	D-13
R523	D-13
R524	D-13
R525	D-13
R526	D-13
R527	B-17
R529	E-12
R551	G-11
R552	G-15
R553	G-13
R554	G-12
R556	G-13
R557	G-12
R558	F-15
R559	G-15
R560	G-15
R561	G-15
R562	G-15
R565	F-15
R568	G-13
R569	F-15
R571	F-15
R573	G-15
R574	G-14
R575	G-13
R576	G-13
R577	G-13
R605	G-16
R606	G-16
R610	G-16
R611	G-16
R613	G-16
R614	G-16
R650	F-16
R666	E-17
R667	E-17
R668	E-17
R669	E-17
R670	E-17
R671	E-17
R672	E-16
R673	E-16
R675	F-16
R676	F-16
R679	G-17
R680	G-17
R681	F-17
R682	F-17
R683	F-17
R684	F-17
R685	F-17
R693	F-17
R695	G-16
R696	G-16
R701	F-11
R702	F-11
R703	F-11
R706	F-11
R707	G-12
R708	F-12
R709	F-12
R710	F-12
R711	F-11
R712	E-12
R713	E-12
R714	E-12
R715	E-12
R720	E-12
R721	E-12
R722	E-12
R724	E-11
R725	F-11
R726	F-11
R916	E-16
R917	C-17
R918	C-17
R919	C-17
R920	C-17
X601	G-17
X602	F-15

CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, IR TRANSMITTER, MODE CONTROL
VC-195 (SIDE A)

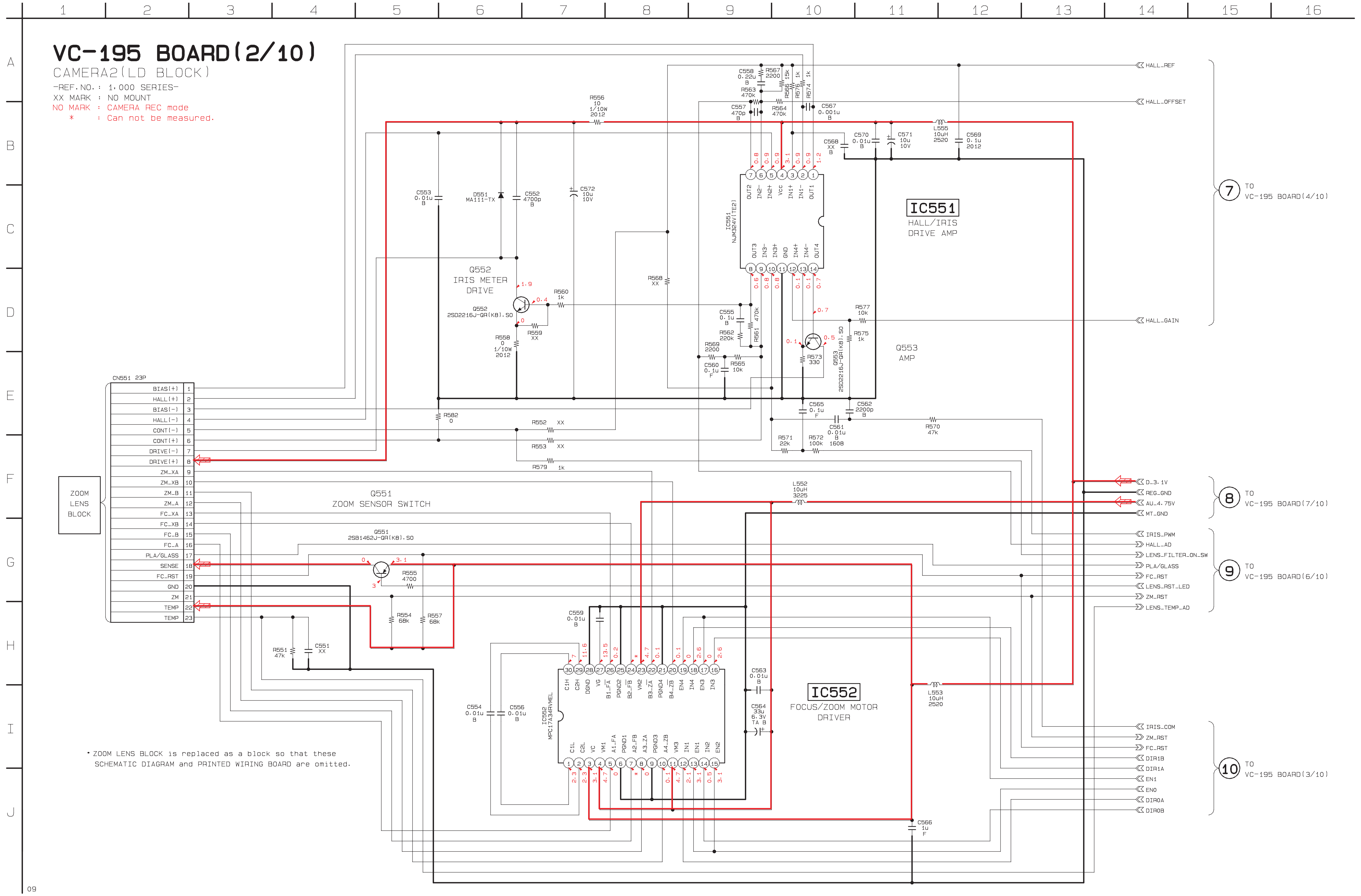
- For schematic diagrams.
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (1/10)



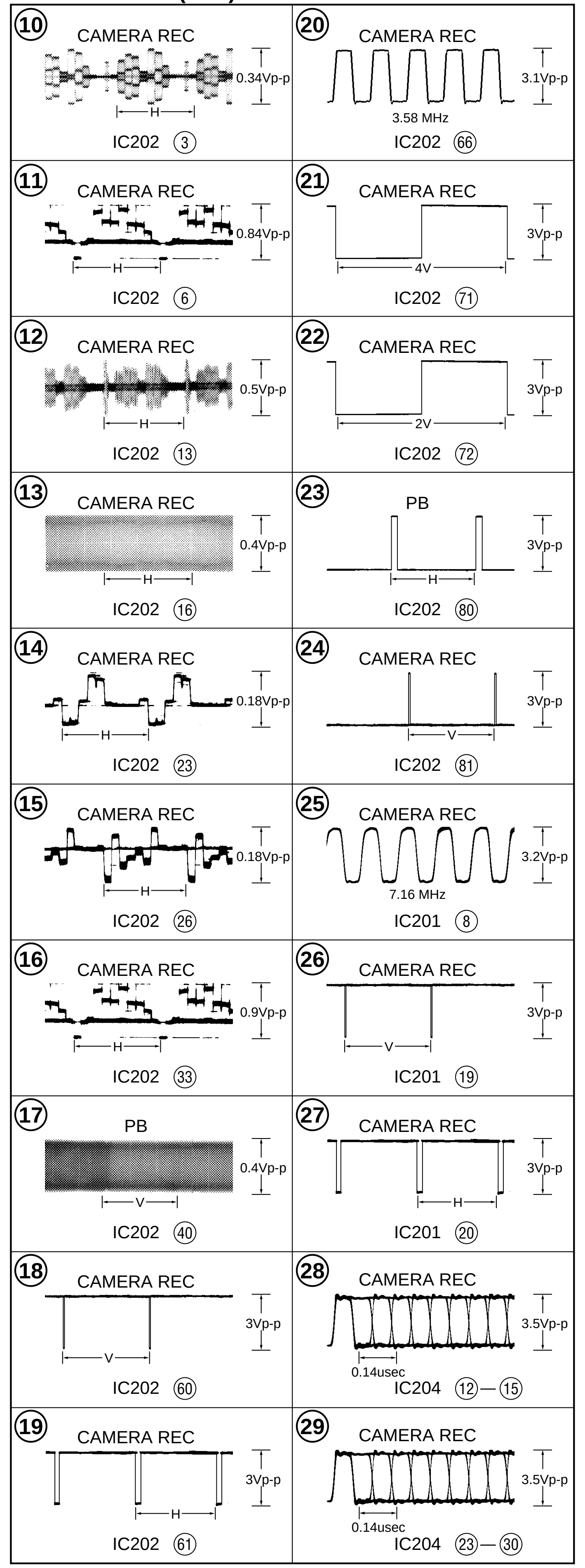


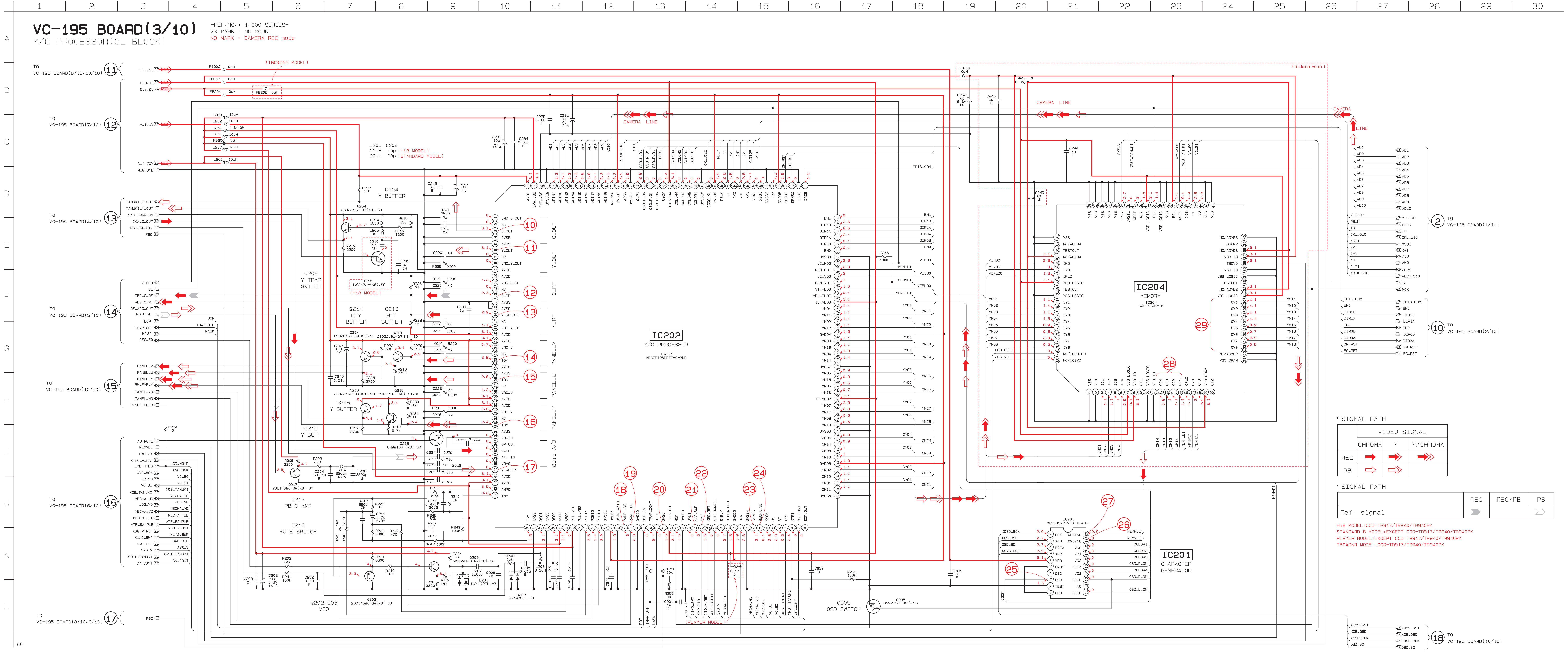
- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.



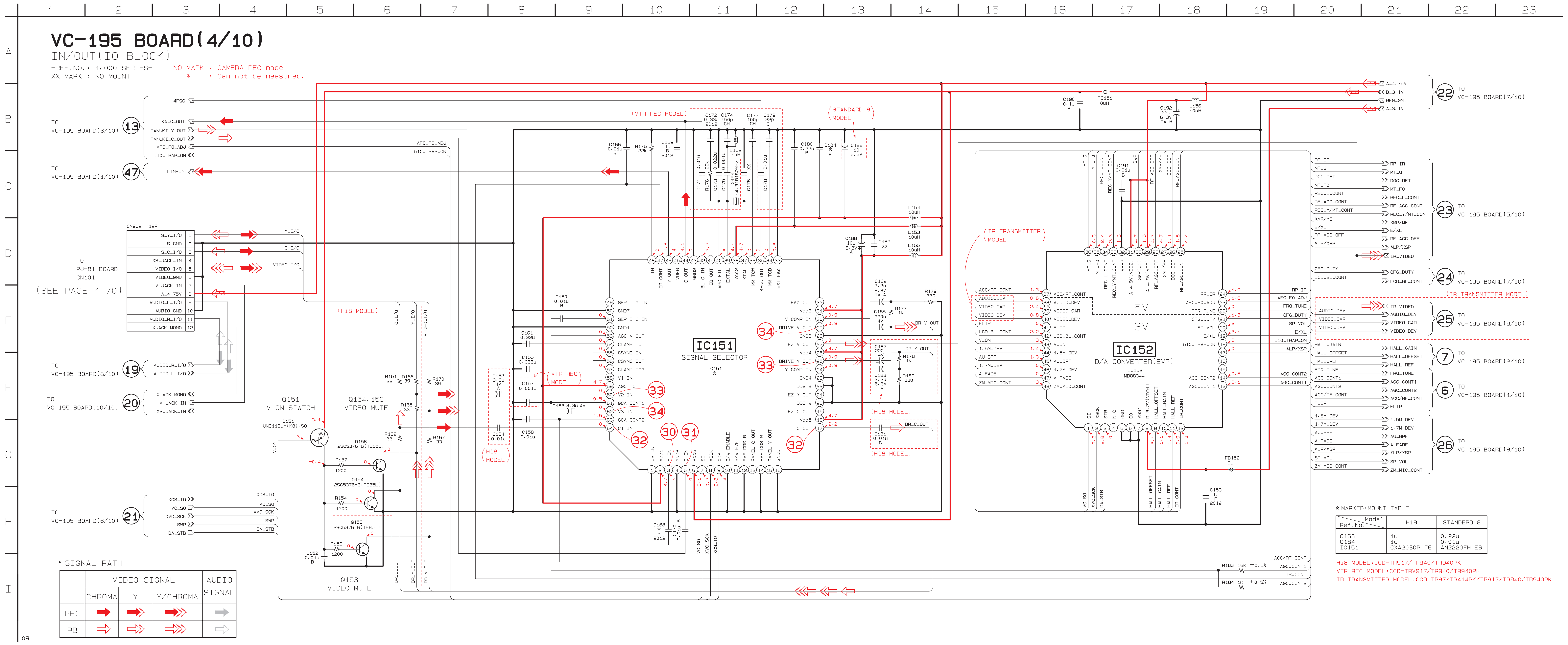
• For schematic diagrams.
• Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (3/10)

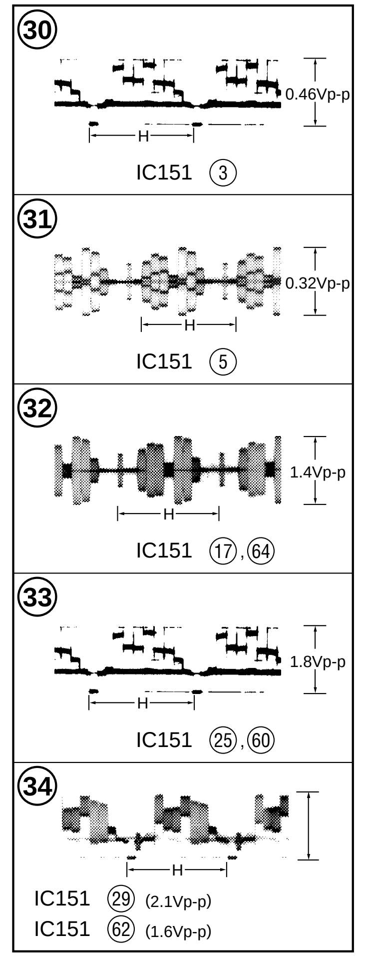




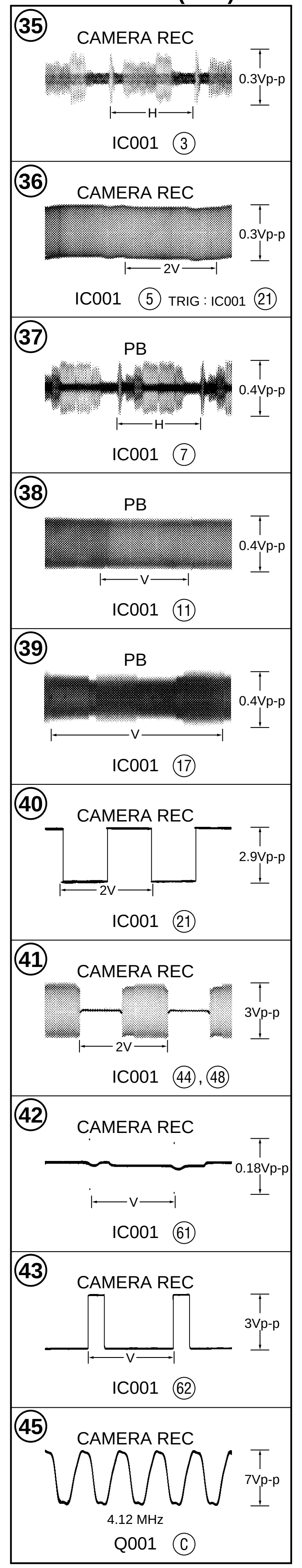
- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.



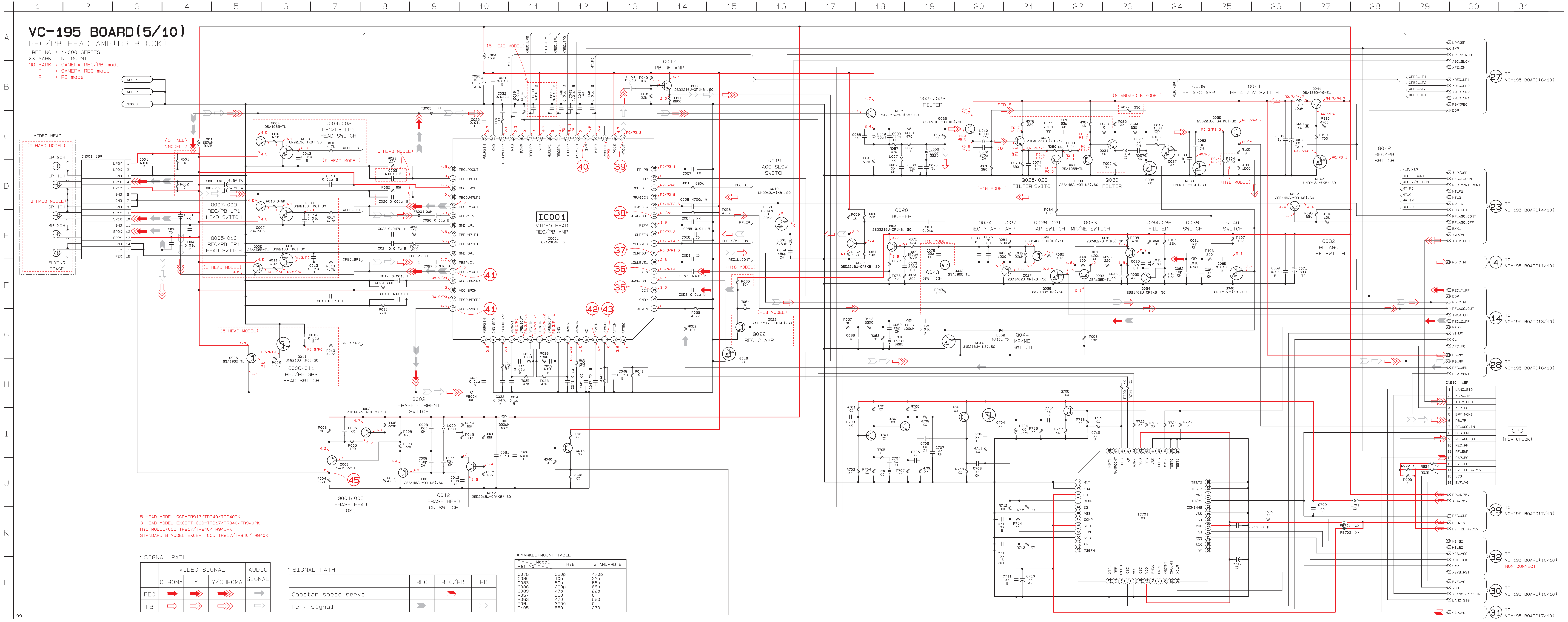
VC-195 BOARD (4/10)
CAMERA REC



VC-195 BOARD (5/10)



- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.



5 HEAD MODEL:CCD-TR917/TR940/TR940PK
3 HEAD MODEL:EXCEPT CCD-TR917/TR940/TR940PK
Hi8 MODEL:CCD-TR917/TR940/TR940PK
STANDARD 8 MODEL:EXCEPT CCD-TR917/TR940/TR940K

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡ (gray)
PB	⇨	⇨»	⇨»»	⇨ (gray)

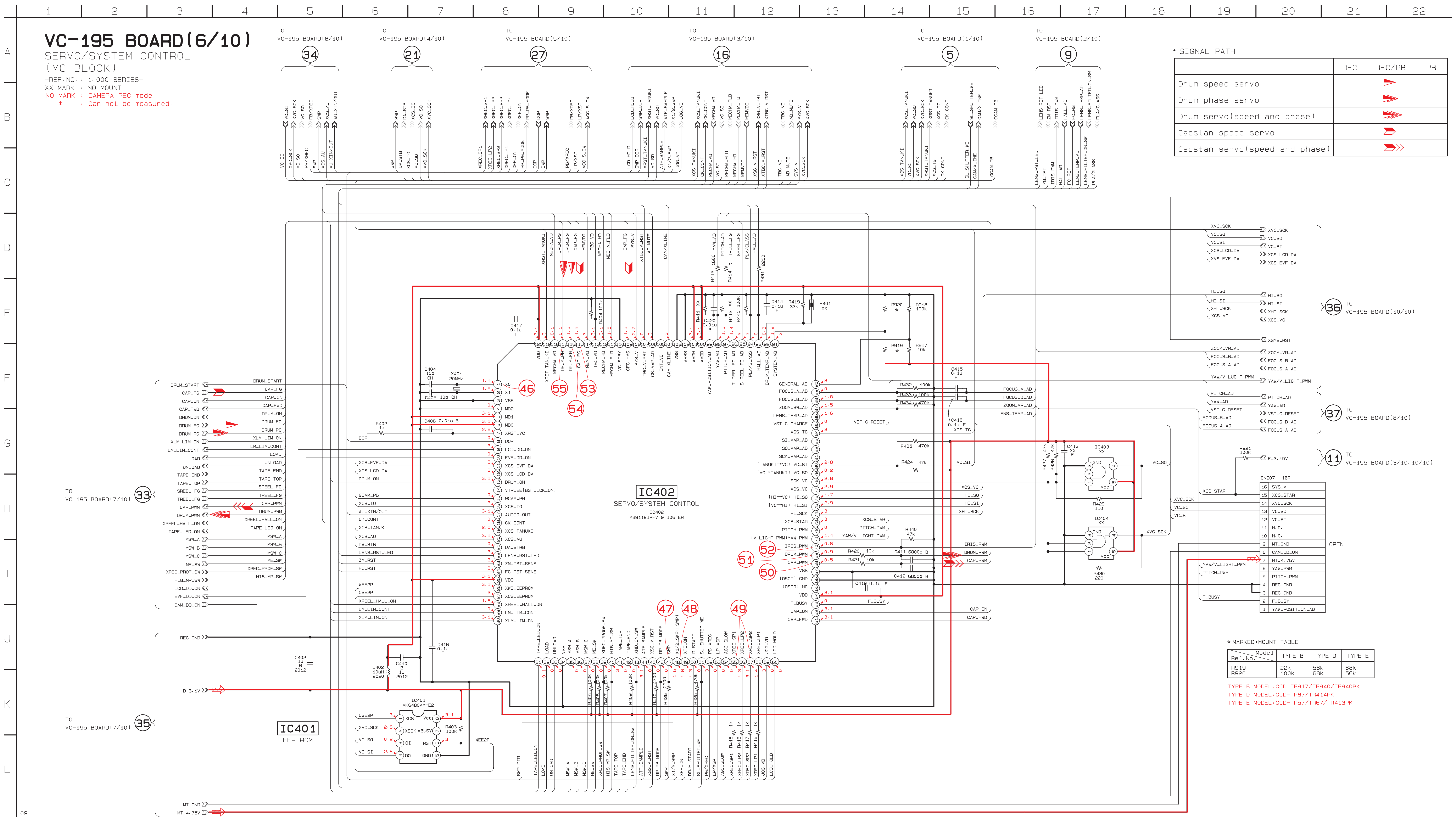
• SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➡ (red)	
Ref. signal	➡ (gray)		⇨

* MARKED:MOUNT TABLE

Ref.No. \ Model	Hi8	STANDARD 8
C075	330p	470p
C080	10p	22p
C083	82p	68p
C088	220p	68p
C089	47p	22p
R057	680	0
R063	470	560
R064	3900	0
R105	680	270

- For schematic diagrams.
- Refer to page 4–13 for Printed Wiring Board.



• SIGNAL PATH

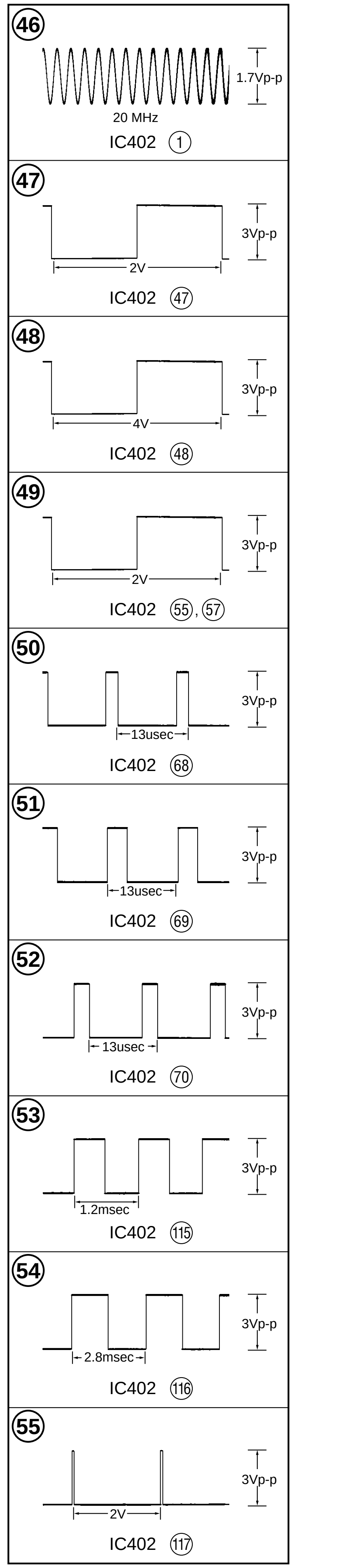
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo(speed and phase)			
Capstan speed servo			
Capstan servo(speed and phase)			

☆ MARKED:MOUNT TABLE

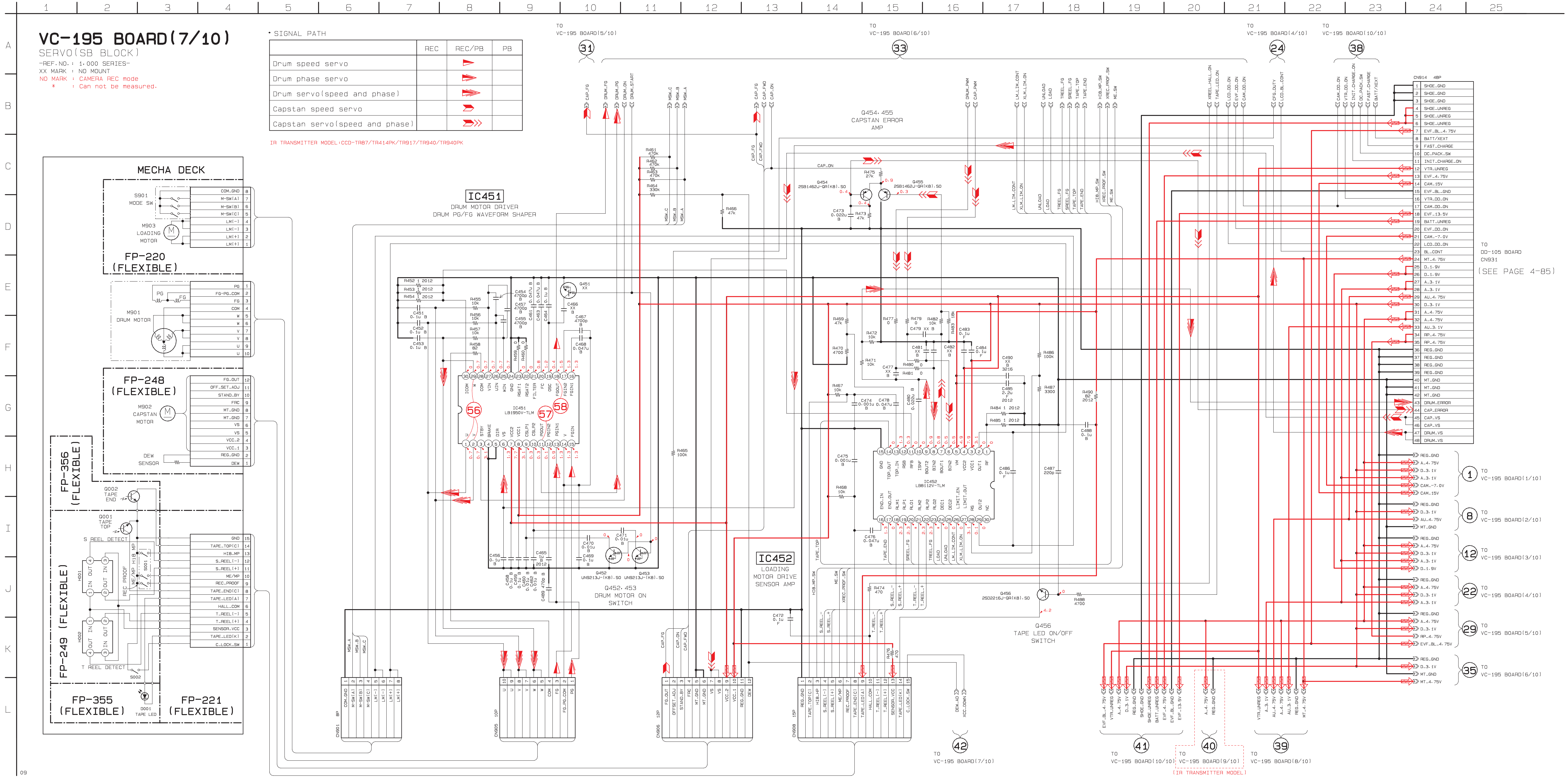
Model / Ref.No.	TYPE B	TYPE D	TYPE E
R919 R920	22k 100k	56k 68k	68k 56k

TYPE B MODEL:CCD-TR917/TR940/TR940PK
TYPE D MODEL:CCD-TR87/TR414PK
TYPE E MODEL:CCD-TR57/TR67/TR413PK

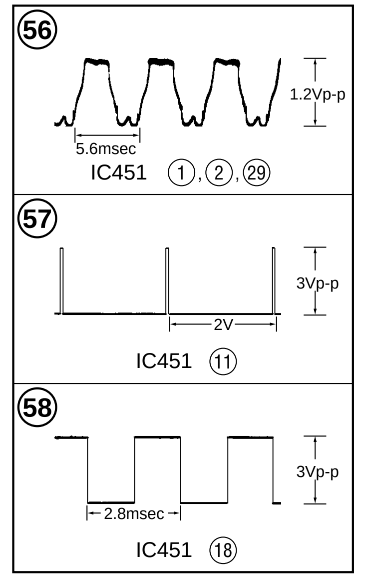
VC-195 BOARD (6/10)
CAMERA REC



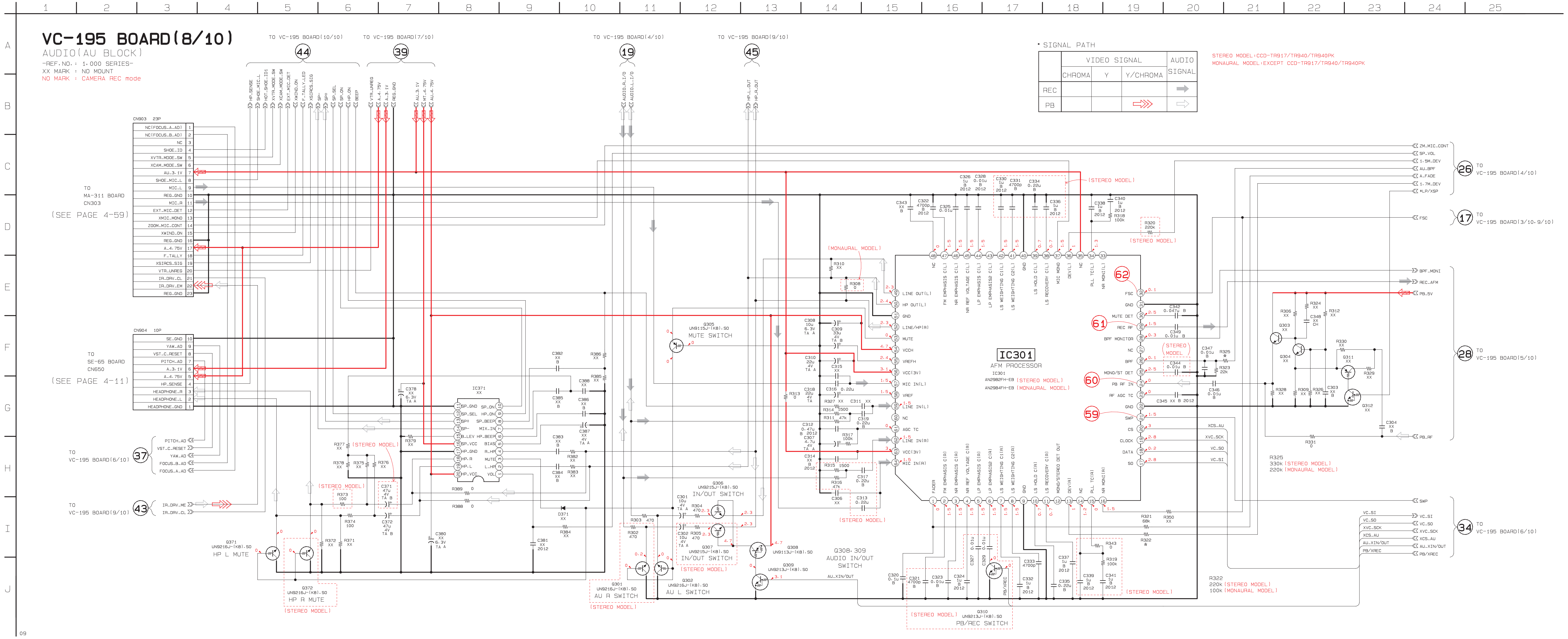
• **For schematic diagrams.** • Refer to page 4–13 for Printed Wiring Board.



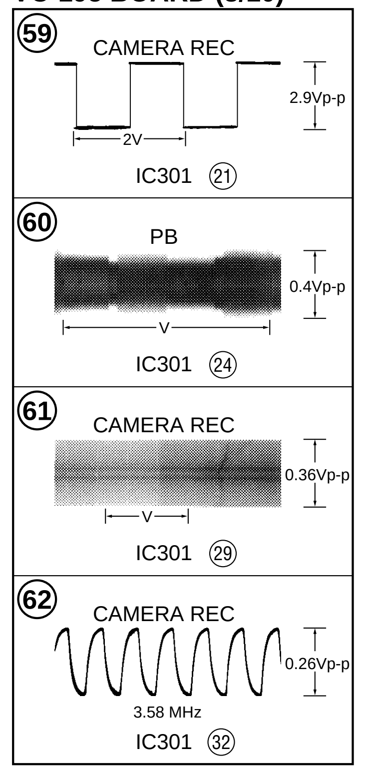
VC-195 BOARD (7/10)
CAMERA REC



• For schematic diagrams.
• Refer to page 4–13 for Printed Wiring Board.

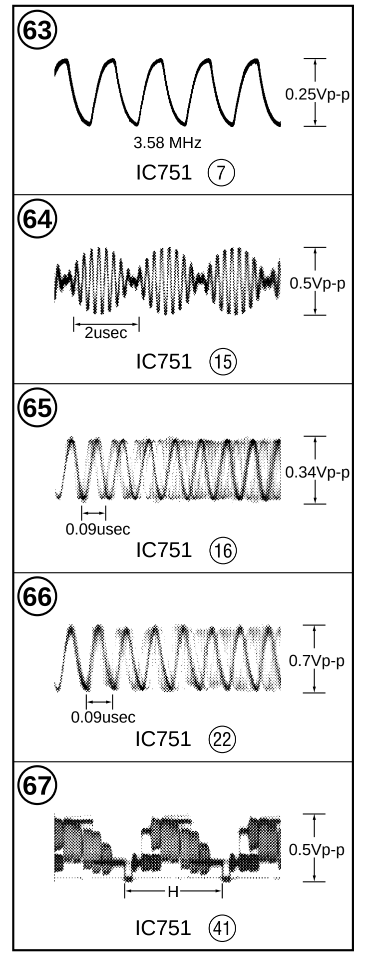


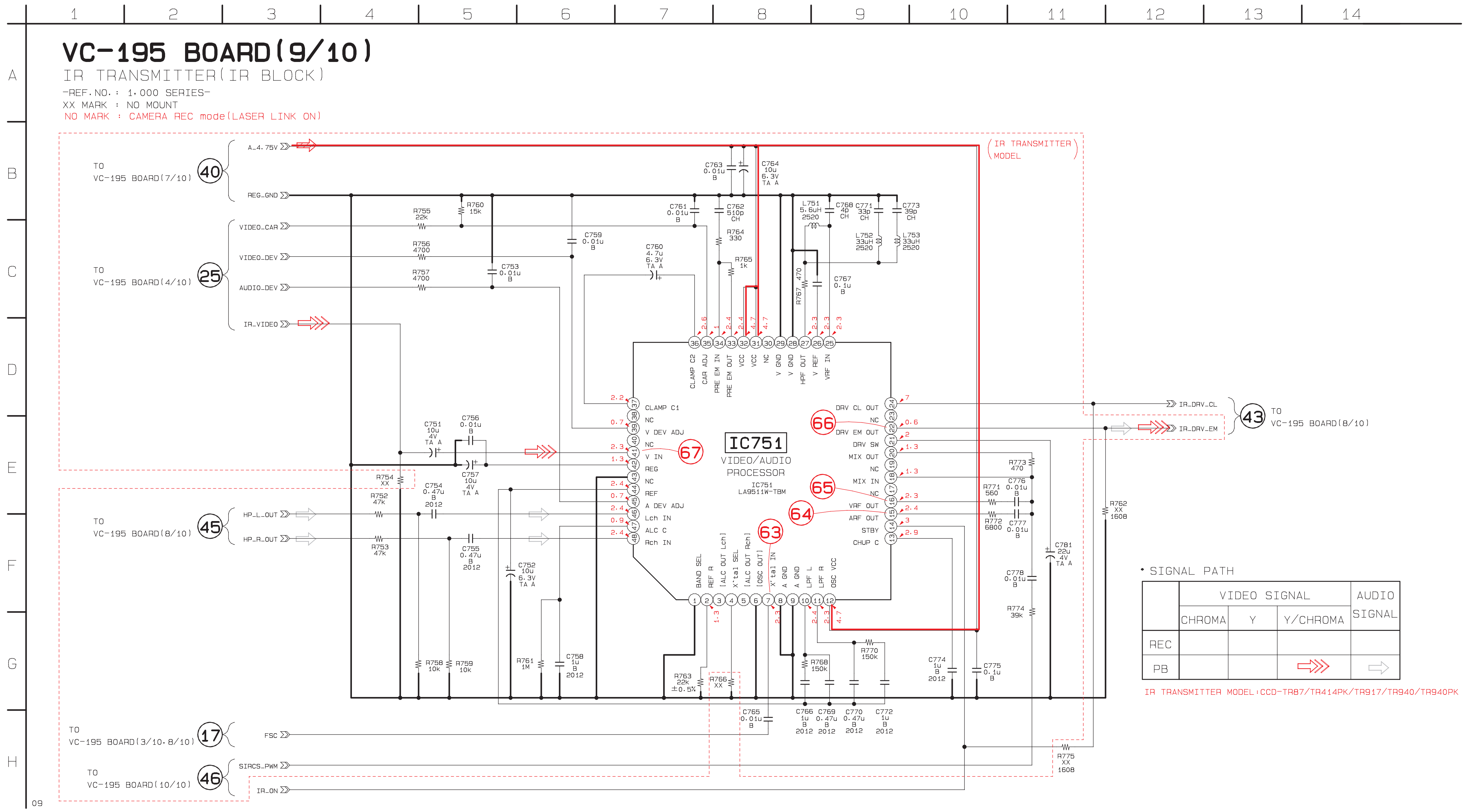
VC-195 BOARD (8/10)



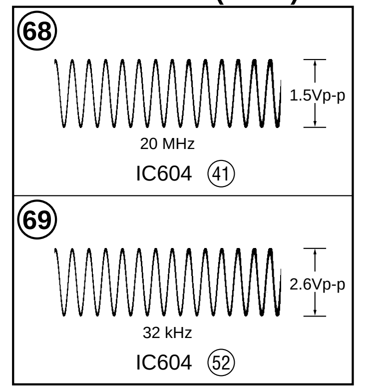
- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (9/10)
PB



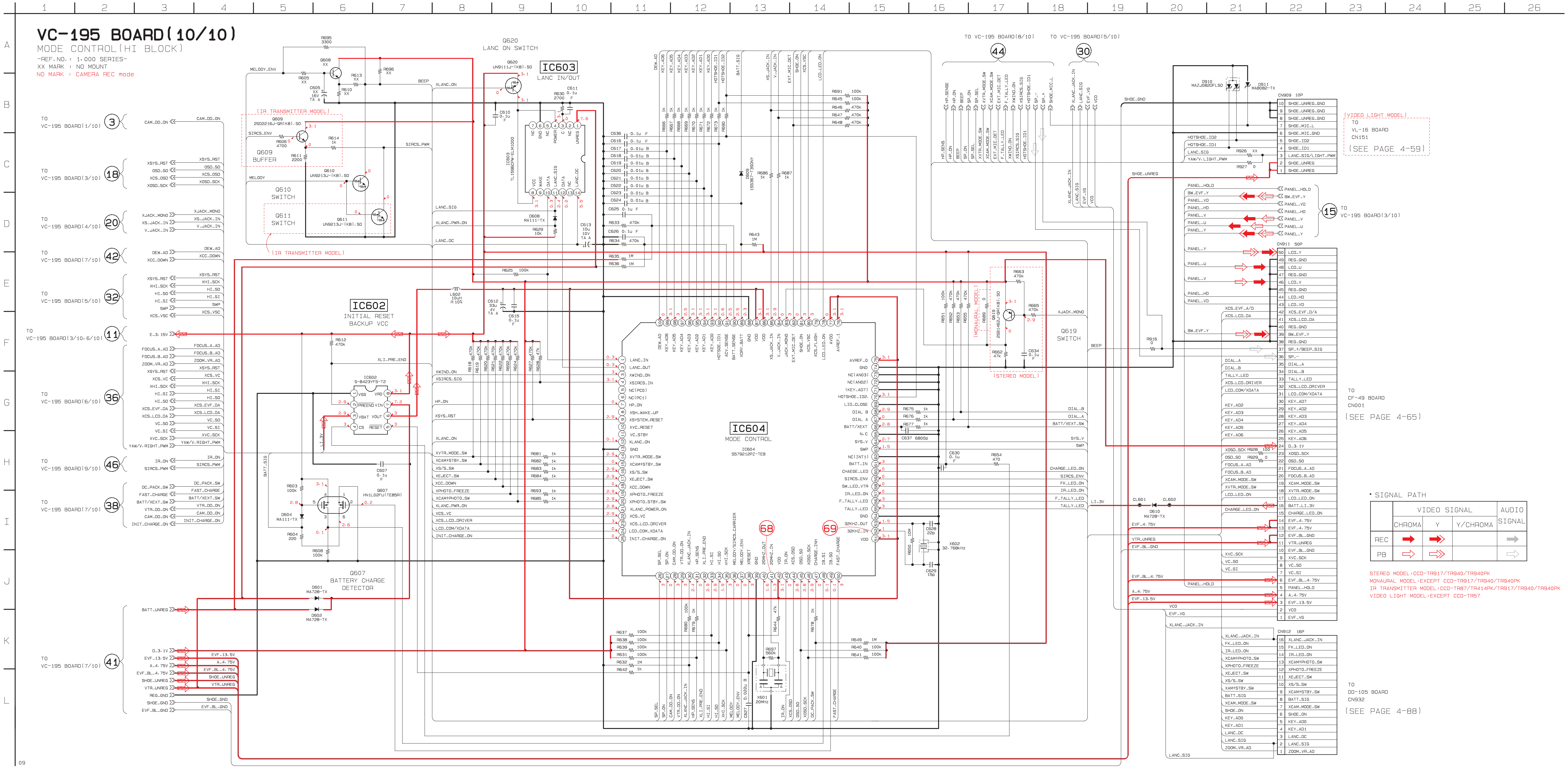


VC-195 BOARD (10/10)

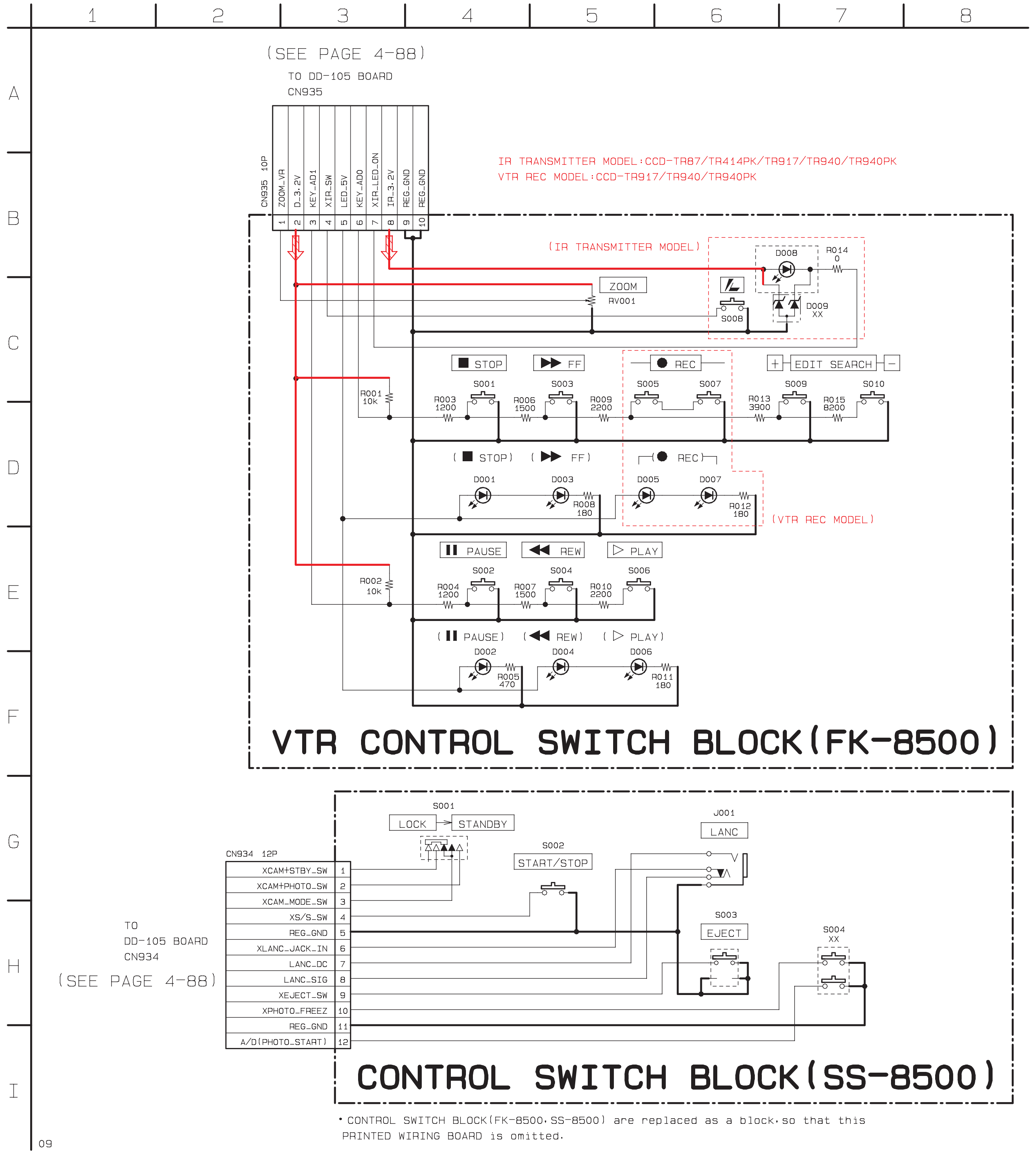


• For schematic diagrams.

• Refer to page 4–13 for Printed Wiring Board.



MODE CONTROL
VC-195 (10/10)

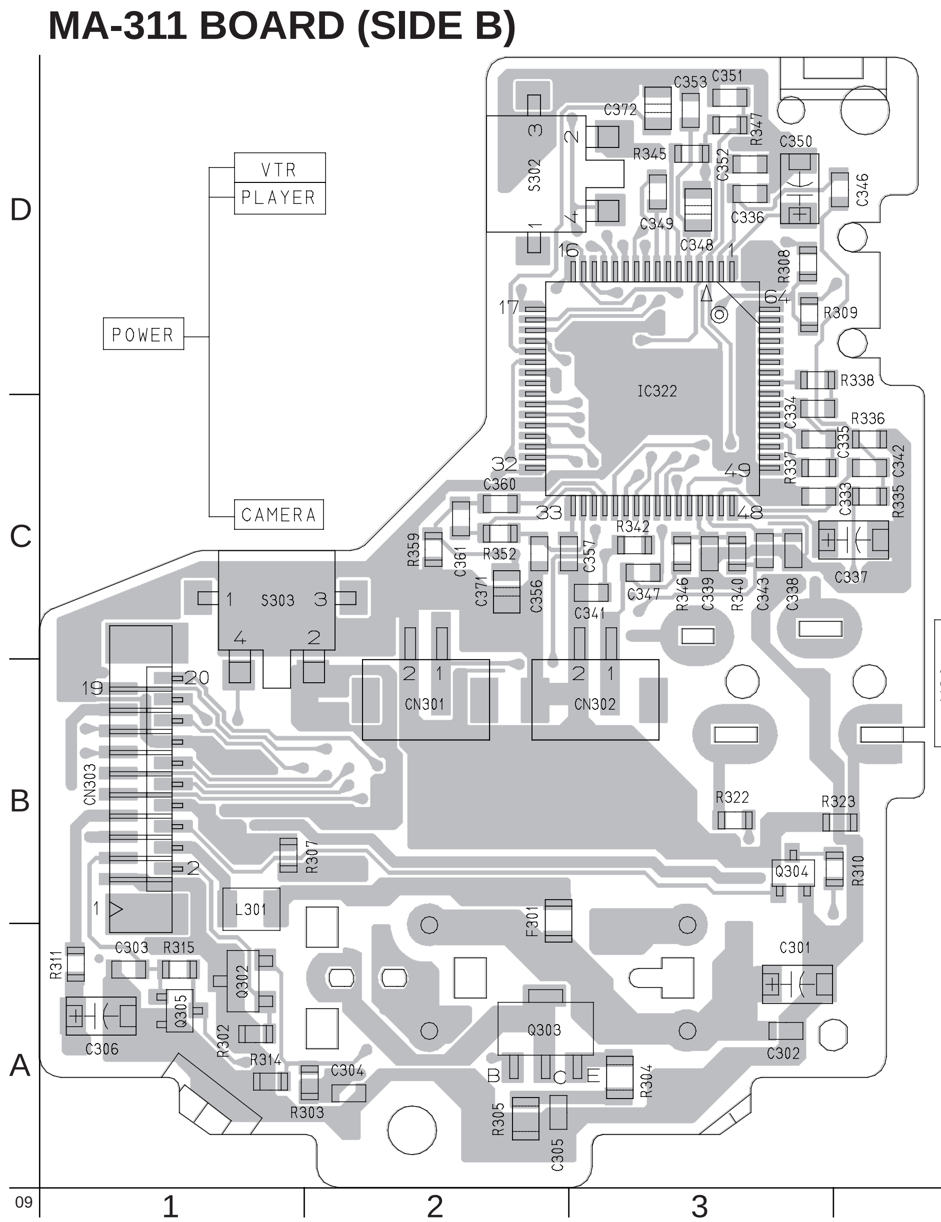


• CONTROL SWITCH BLOCK(FK-8500, SS-8500) are replaced as a block, so that this PRINTED WIRING BOARD is omitted.

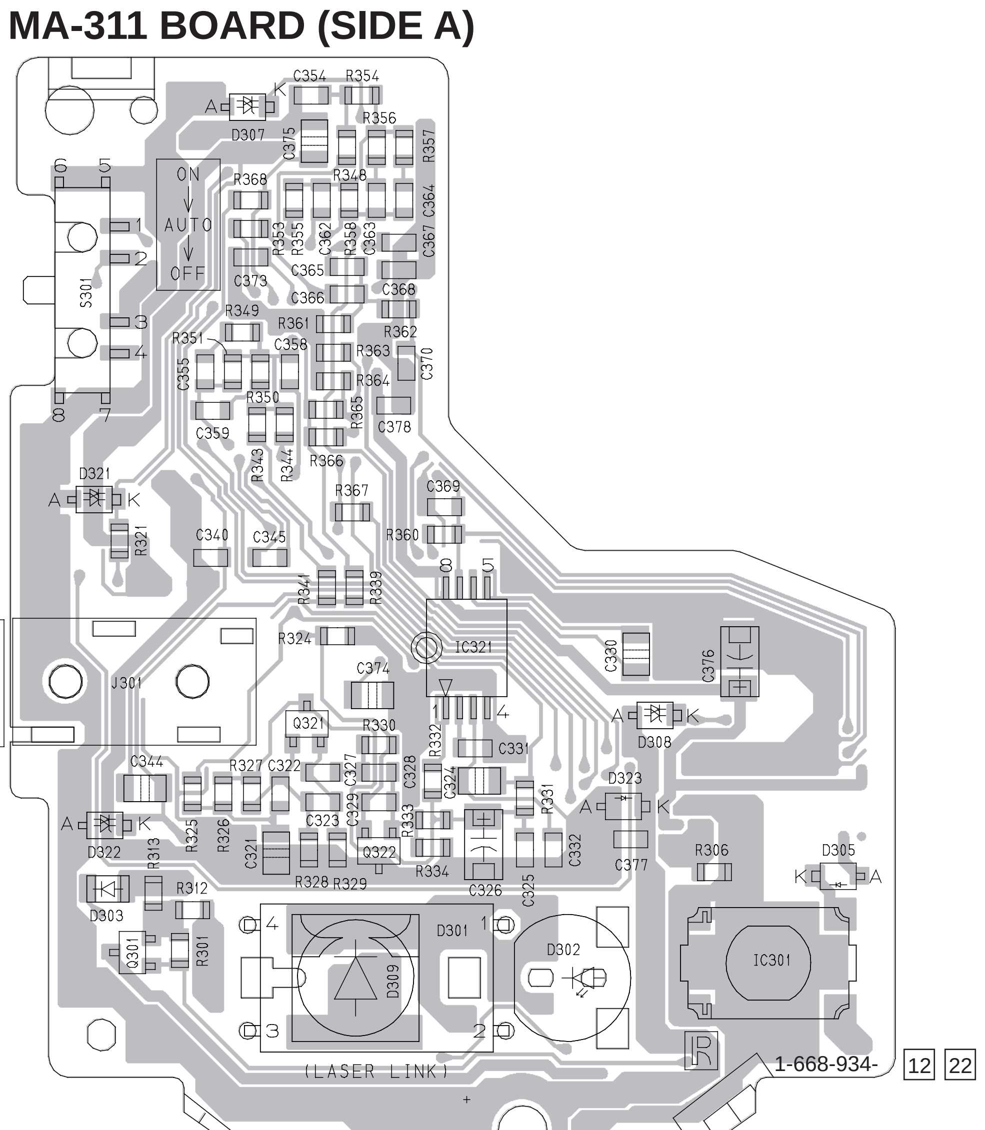
MA-311 (STEREO MIC, LASER LINK) PRINTED WIRING BOARDS

– Ref No. MA-311 BOARD: 3,000 series –

MA-311 BOARD (SIDE B)



MA-311 BOARD (SIDE A)



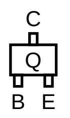
MA-311 BOARD

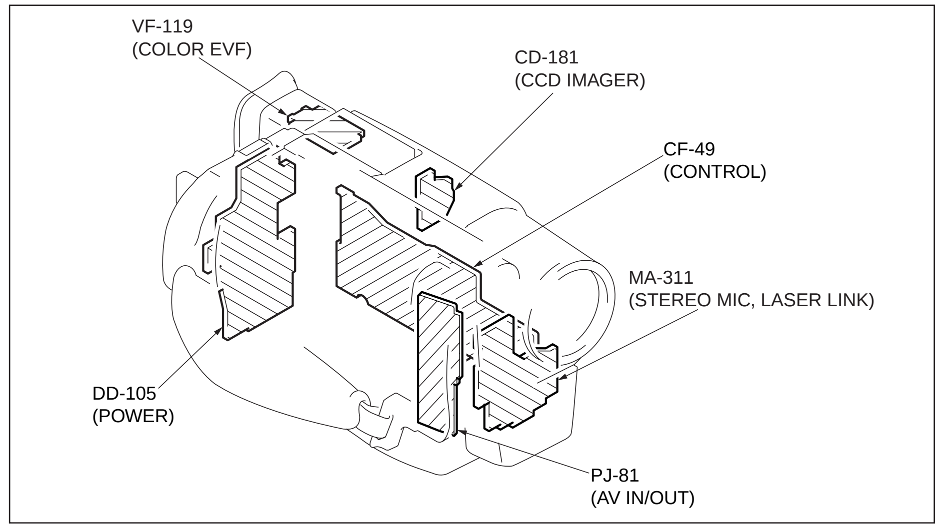
C301	A-3	C344	B-5	C373	D-5	Q301	A-5	R327	B-5	R356	D-6
C302	A-3	C345	C-5	C374	B-6	Q302	A-1	R328	B-5	R357	D-6
C303	A-1	C346	D-4	C375	D-5	Q303	A-2	R329	B-5	R358	D-5
C304	A-2	C347	C-3	C376	B-7	Q304	B-3	R330	B-6	R359	C-2
C305	A-2	C348	D-3	C377	B-6	Q305	A-1	R331	B-6	R360	C-6
C306	A-1	C349	D-3	C378	C-6	Q321	B-5	R332	B-6	R361	D-5
C321	B-5	C350	D-3			Q322	B-6	R333	B-6	R362	D-6
C322	B-5	C351	D-3	CN301	B-2			R334	B-6	R363	D-5
C323	B-5	C352	D-3	CN302	B-3	R301	A-5	R335	C-4	R364	D-5
C324	B-6	C353	D-3	CN303	B-1	R302	A-1	R336	C-4	R365	C-5
C325	B-6	C354	D-5			R303	A-2	R337	C-3	R366	C-5
C326	B-6	C355	D-5	D301	A-6	R304	A-3	R338	D-3	R367	C-5
C327	B-5	C356	C-2	D302	A-6	R305	A-2	R339	C-5	R368	D-5
C328	B-6	C357	C-2	D303	B-5	R306	B-7	R340	C-3		
C329	B-6	C358	D-5	D305	B-7	R307	B-1	R341	C-5	S301	D-4
C330	C-7	C359	C-5	D307	D-5	R308	D-3	R342	C-3	S302	D-2
C331	B-6	C360	C-2	D308	B-7	R309	D-3	R343	C-5	S303	C-1
C332	B-6	C361	C-2	D309	A-5	R310	B-3	R344	C-5		
C333	C-3	C362	D-5	D322	B-5	R311	A-1	R345	D-3		
C334	C-3	C363	D-6	D323	B-6	R312	B-5	R346	C-3		
C335	C-3	C364	D-6			R313	B-5	R347	D-3		
C336	D-3	C365	D-5	IC301	A-7	R314	A-1	R348	D-5		
C337	C-4	C366	D-5	IC321	C-6	R315	A-1	R349	D-5		
C338	C-3	C367	D-6	IC322	D-3	R321	C-5	R350	D-5		
C339	C-3	C368	D-6			R322	B-3	R351	D-5		
C340	C-5	C369	C-6	J310	B-5	R323	A-4	R352	C-2		
C341	C-3	C370	D-6			R324	C-5	R353	D-5		
C342	C-4	C371	C-2	L301	B-1	R325	B-5	R354	D-5		
C343	C-3	C372	D-3			R326	B-5	R355	D-5		

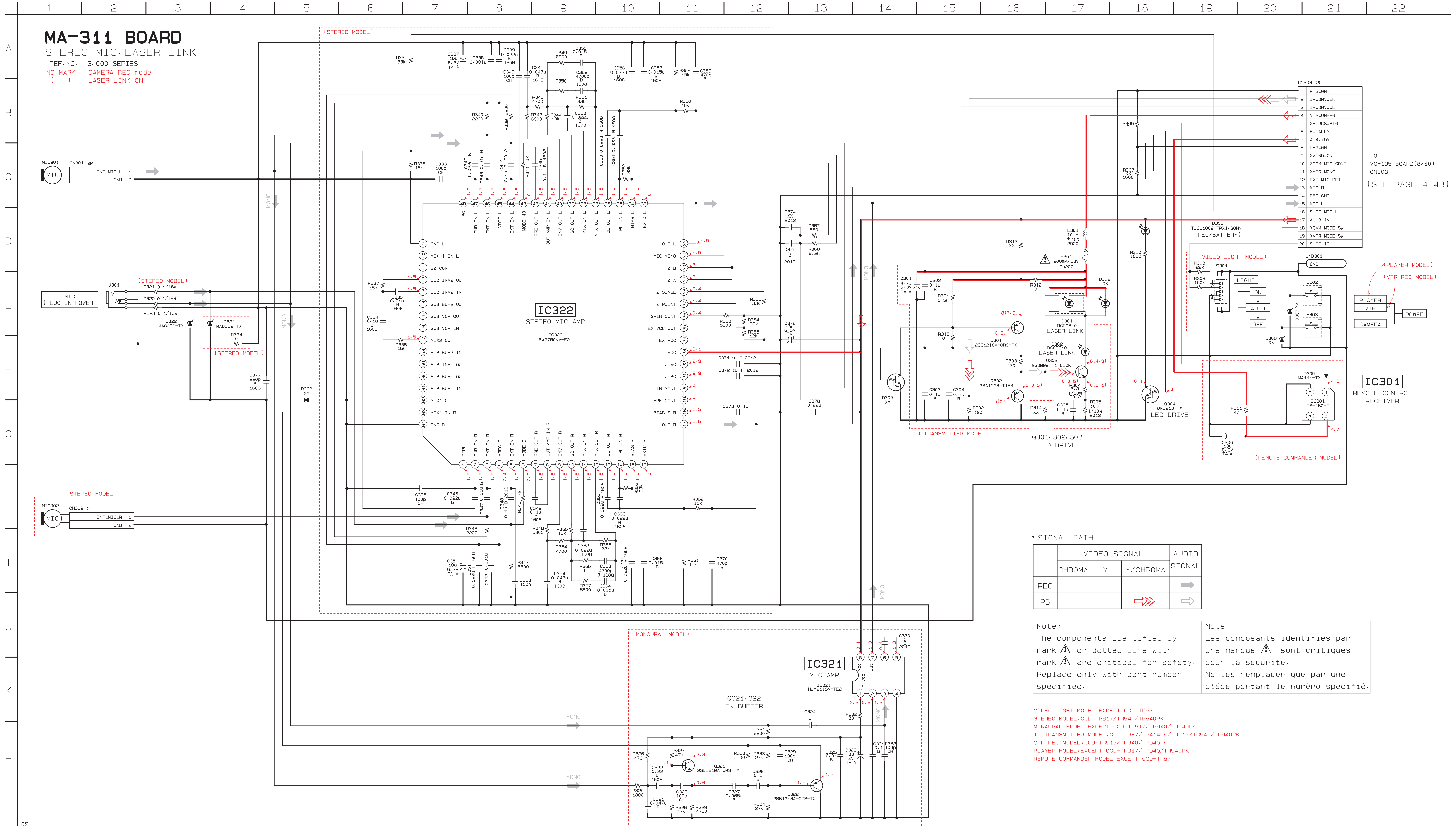
• **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor







• SIGNAL PATH

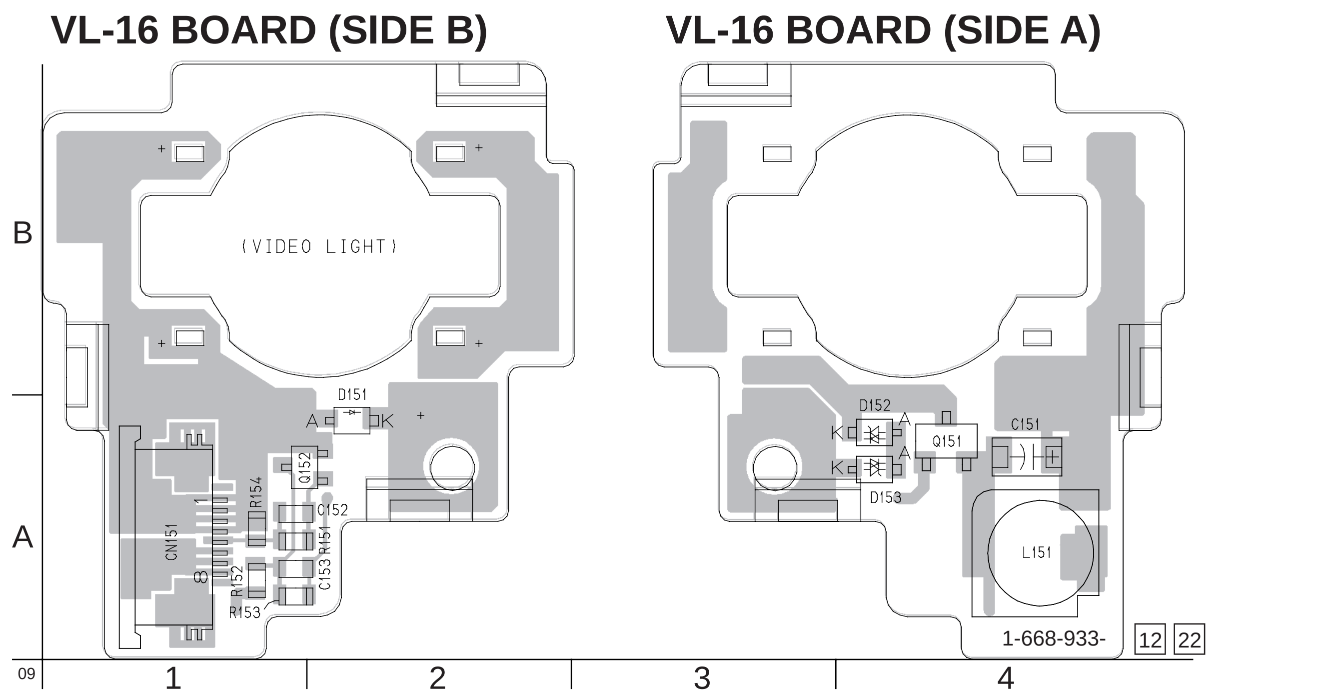
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨⟫	⇨

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

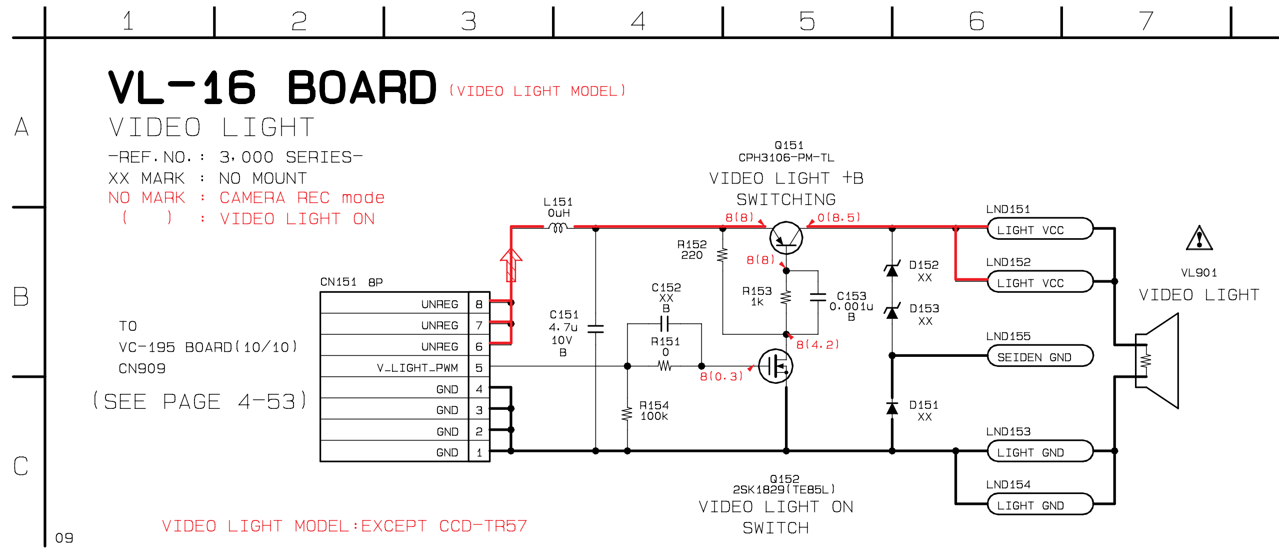
VIDEO LIGHT MODEL:EXCEPT CCD-TR57
STEREO MODEL:CCD-TR917/TR940/TR940PK
MONAURAL MODEL:EXCEPT CCD-TR917/TR940/TR940PK
IR TRANSMITTER MODEL:CCD-TR87/TR414PK/TR917/TR940/TR940PK
VTR REC MODEL:CCD-TR917/TR940/TR940PK
PLAYER MODEL:EXCEPT CCD-TR917/TR940/TR940PK
REMOTE COMMANDER MODEL:EXCEPT CCD-TR57

VL-16 (VIDEO LIGHT) PRINTED WIRING BOARD

– Ref No. VL-16 BOARD: 3,000 series –



VL-16 BOARD	
C151	A-4
C152	A-1
C153	A-1
CN151	A-1
D151	A-2
D152	A-4
D153	A-4
L151	A-4
Q151	A-4
Q152	A-1
R151	A-1
R152	A-1
R153	A-1
R154	A-1



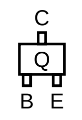
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

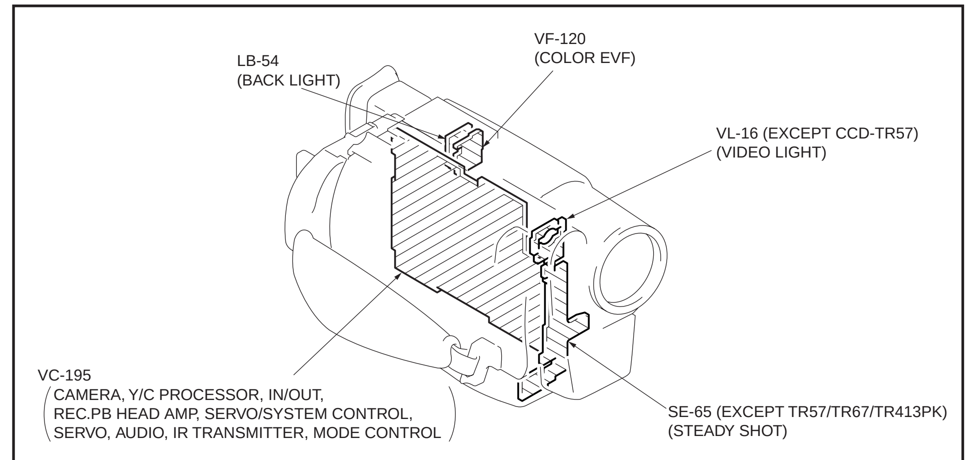
Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor



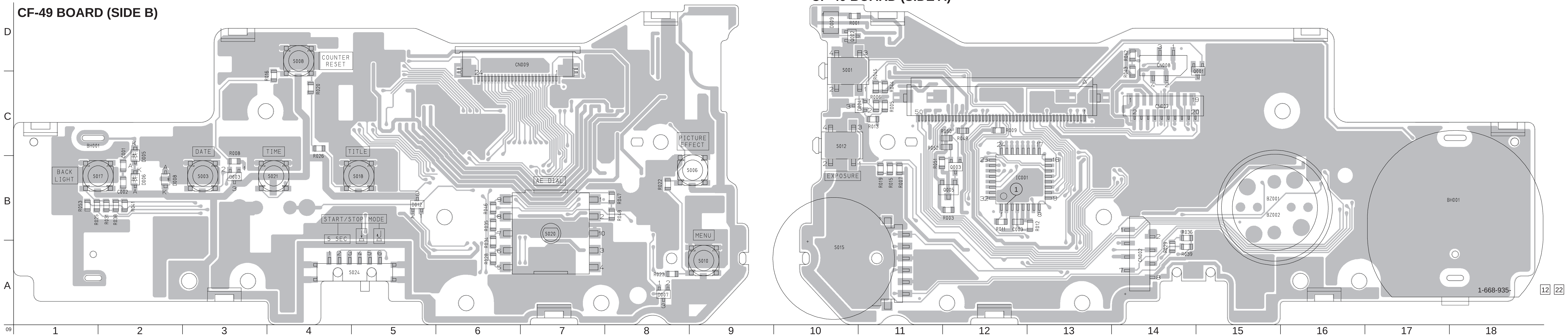


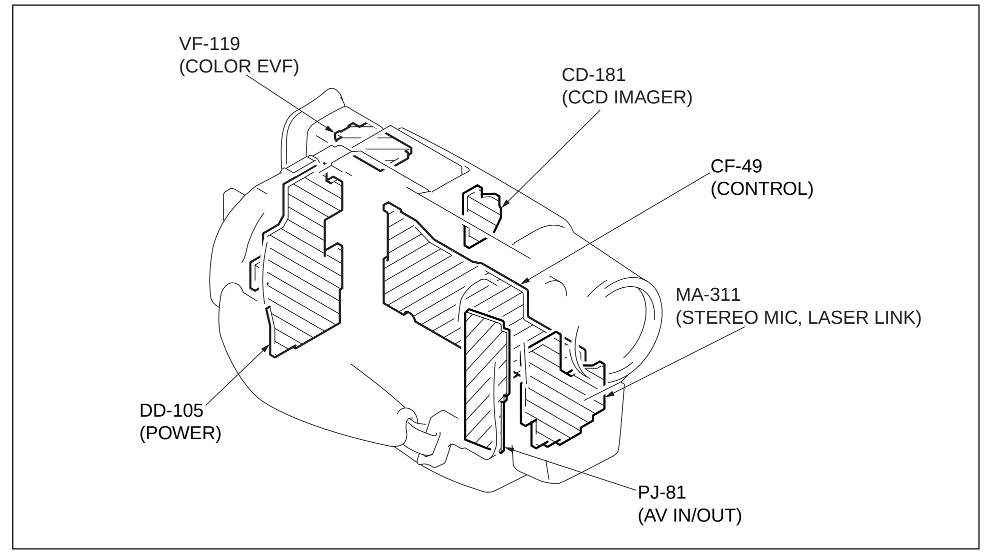
CF-49 (CONTROL) PRINTED WIRING BOARD

– Ref No. CF-49 BOARD: 3,000 series –

CF-49 BOARD

Ref.	Location
BH001	B-18
BZ001	B-15
BZ002	B-15
C001	B-2
C002	B-2
C003	B-12
CN002	A-14
CN007	C-14
CN008	D-14
CN009	D-6
D003	B-3
D004	C-11
D005	B-2
D006	B-2
D007	A-8
D008	B-2
D009	D-10
D012	B-5
IC001	B-12
Q001	C-15
Q002	D-10
Q003	B-12
Q005	B-12
R001	D-10
R003	B-12
R005	C-11
R006	C-11
R007	B-11
R008	B-3
R009	C-11
R011	B-12
R012	B-13
R013	C-11
R015	B-11
R016	C-4
R019	B-11
R020	C-4
R022	B-8
R023	A-8
R025	B-1
R026	C-4
R028	A-6
R029	A-14
R031	B-2
R034	A-6
R035	B-6
R038	B-2
R039	A-14
R041	B-2
R042	D-14
R043	C-14
R044	C-11
R045	C-11
R046	B-6
R047	B-8
R048	B-8
R049	C-11
R050	C-11
R051	B-12
R052	C-11
R053	B-1
S001	C-10
S003	B-3
S006	B-9
S008	D-4
S010	A-9
S012	C-10
S015	A-10
S017	B-1
S018	B-5
S020	B-7
S021	B-4
S024	A-5

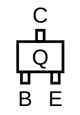


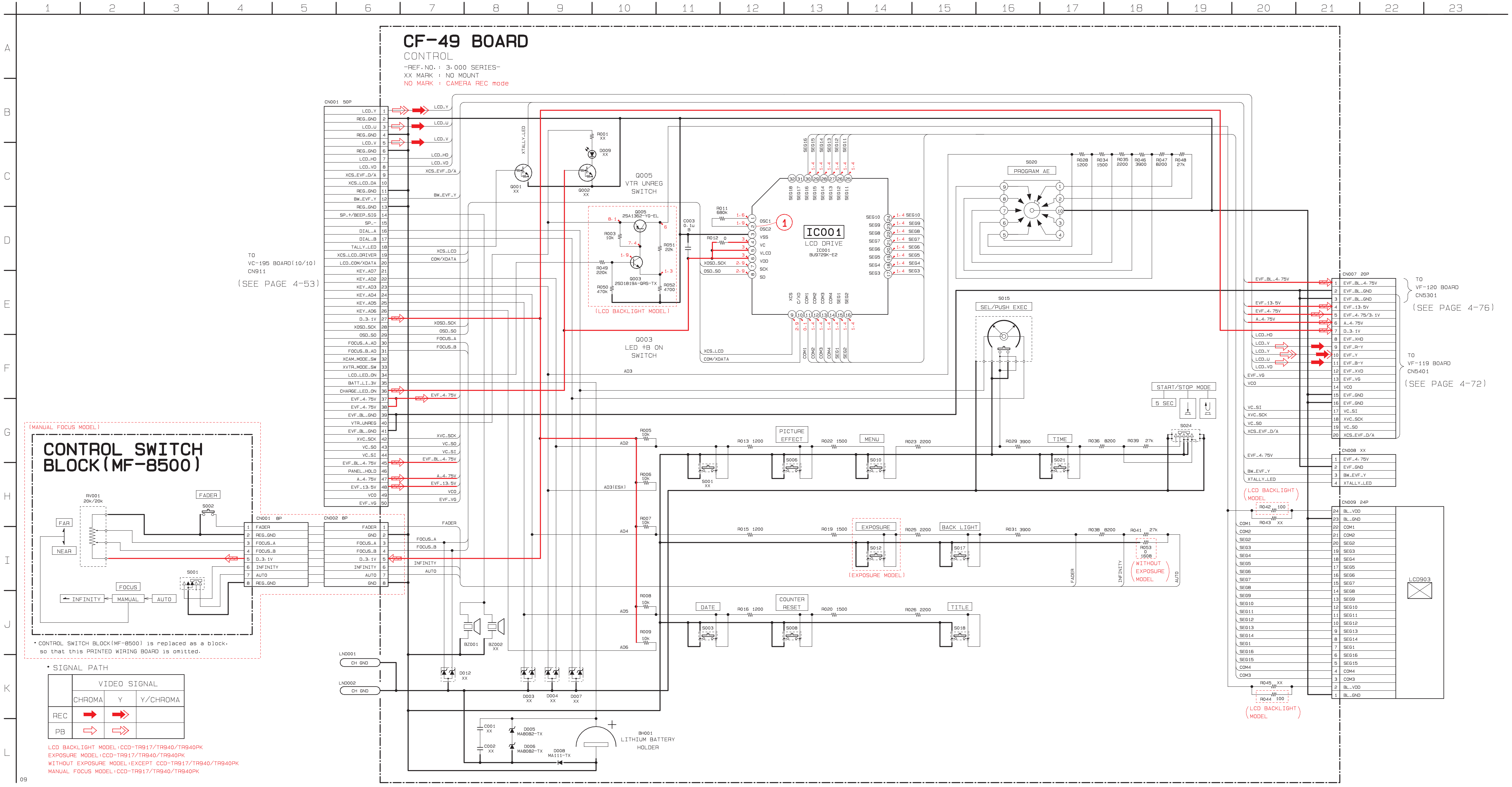


• For Printed Wiring Boards.

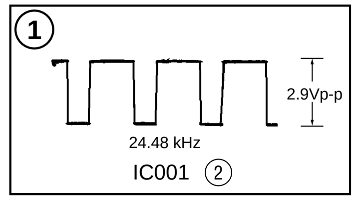
There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor



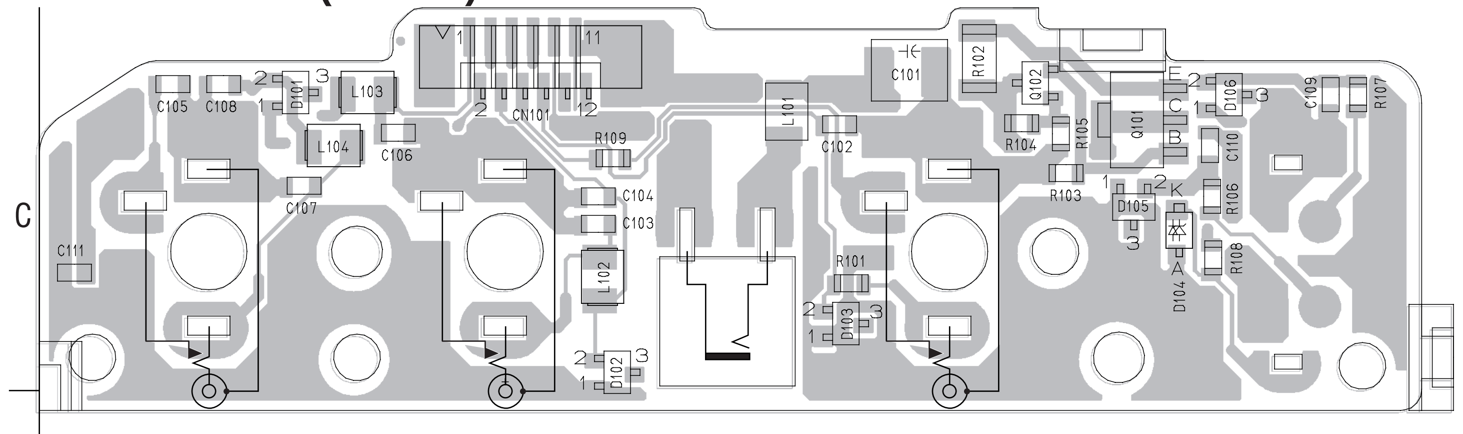


CF-49 BOARD
CAMERA REC

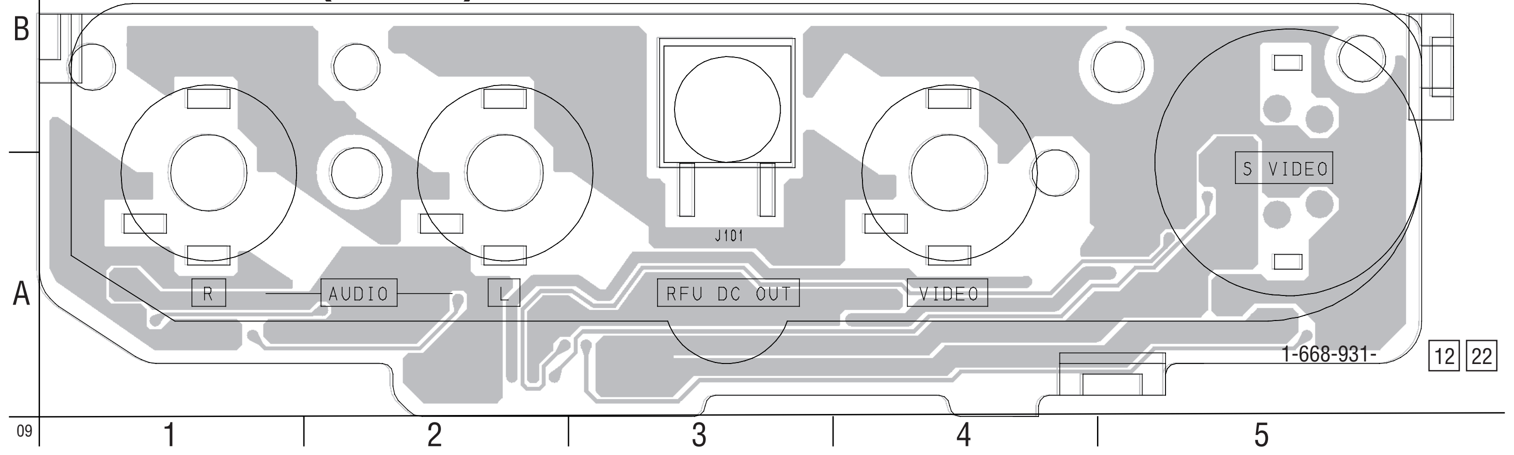


PJ-81 (AV IN/OUT) PRINTED WIRING BOARD
– Ref No. PJ-81 BOARD: 3,000 series –

PJ-81 BOARD (SIDE B)

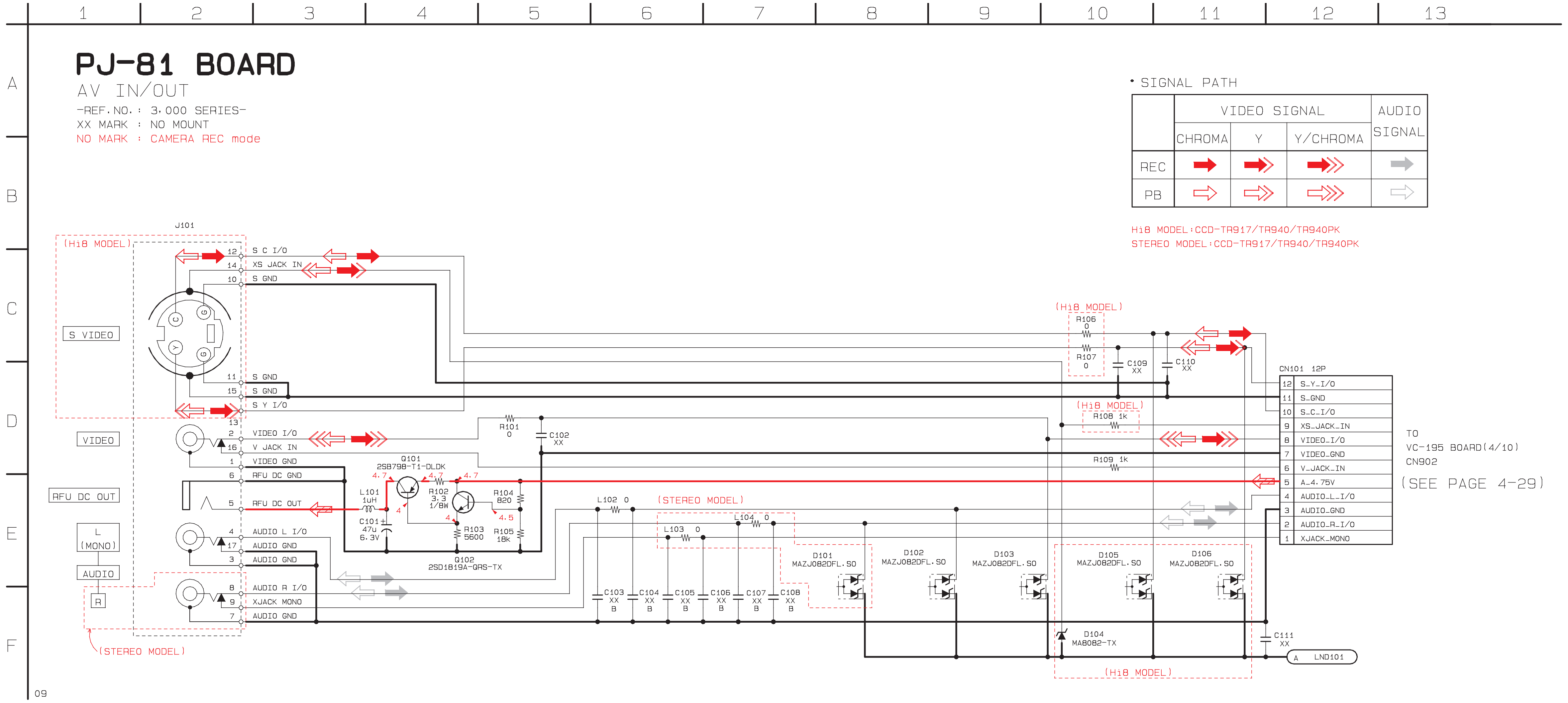


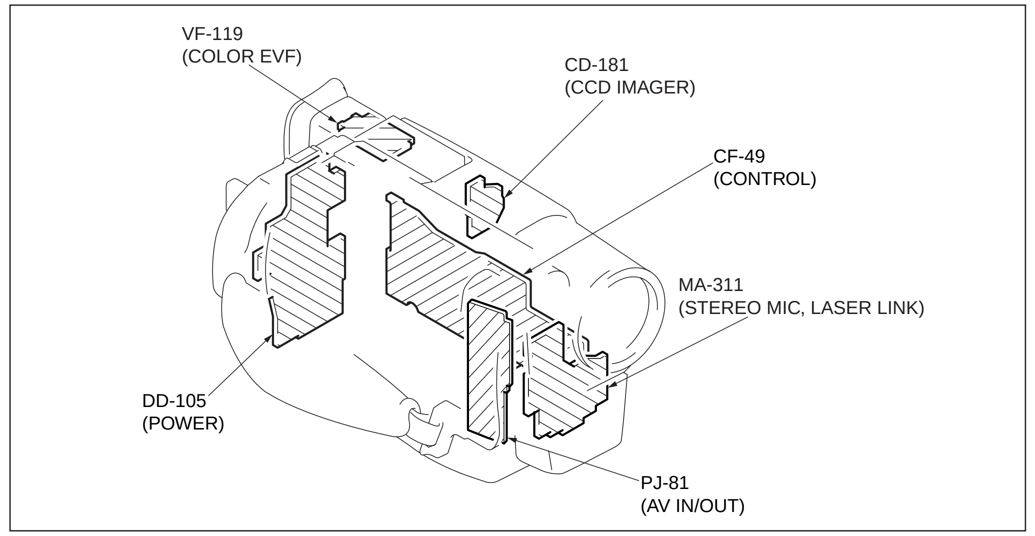
PJ-81 BOARD (SIDE A)



PJ-81 BOARD

C101	C-4
C102	C-4
C103	C-3
C104	C-3
C105	C-1
C106	C-2
C107	C-1
C108	C-1
C109	C-5
C110	C-5
C111	C-1
CN101	C-2
D101	C-1
D102	C-3
D103	C-4
D105	C-5
D106	C-5
D107	C-5
J101	A-3
L101	C-3
L102	C-3
L103	C-2
L104	C-2
Q101	C-5
Q102	C-4
R101	C-4
R102	C-4
R103	C-4
R104	C-4
R105	C-4
R106	C-5
R107	C-5
R108	C-5
R109	C-3

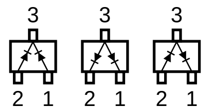




- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

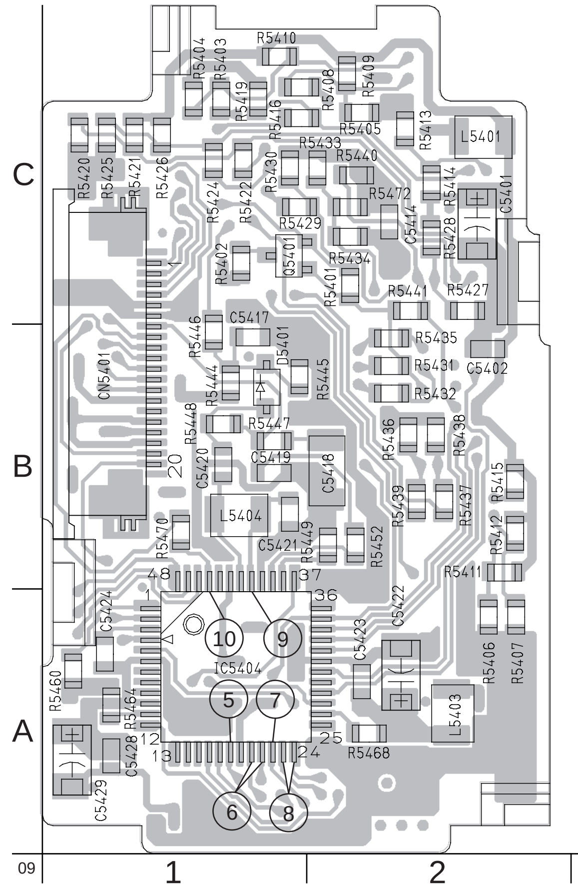
- Chip diode



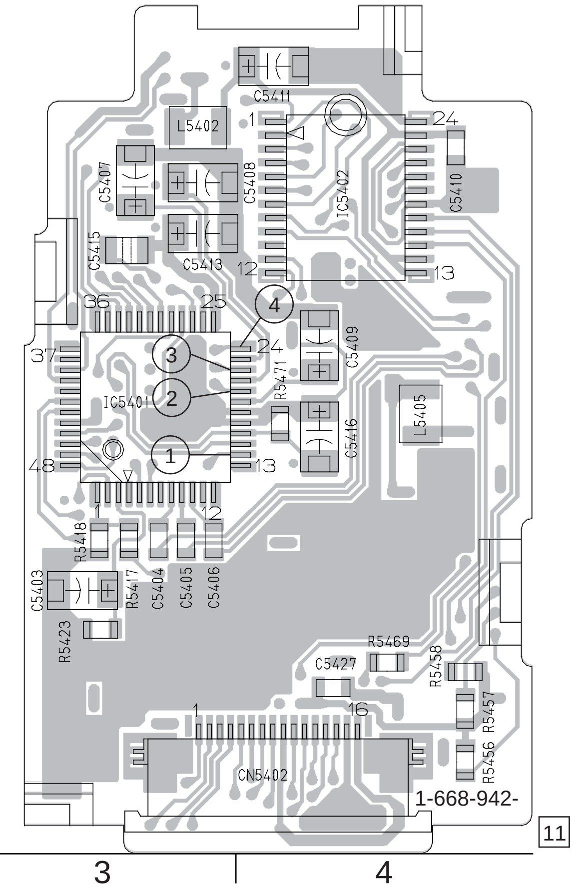
VF-119 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No. VF-119 BOARD: 10,000 series –

VF-119 BOARD (SIDE B)



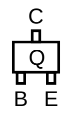
VF-119 BOARD (SIDE A)

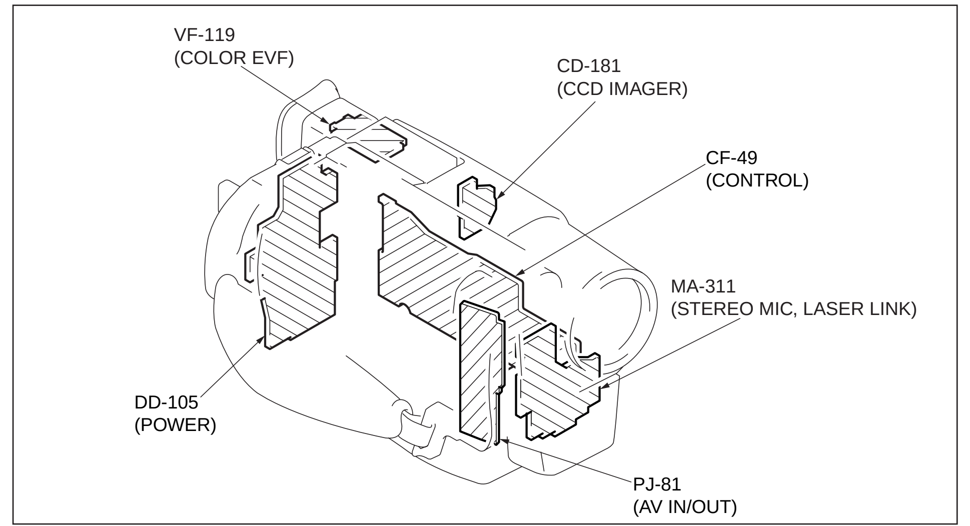


- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



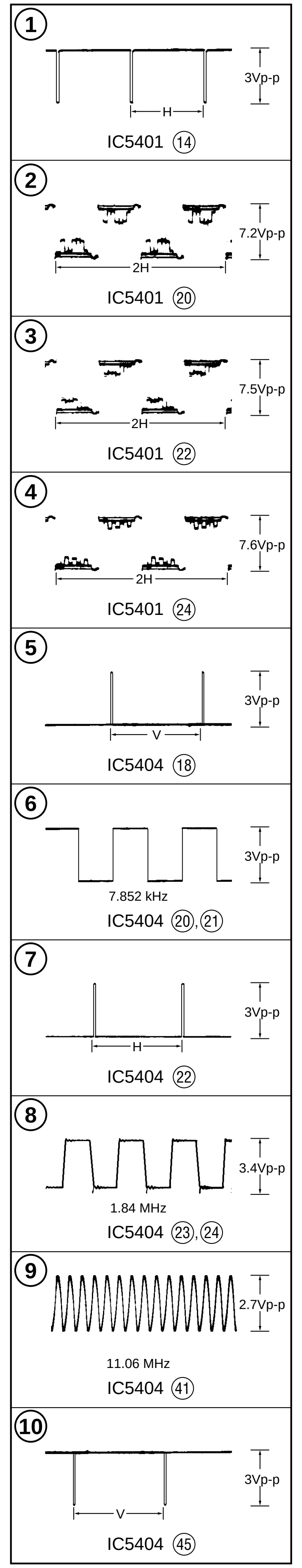


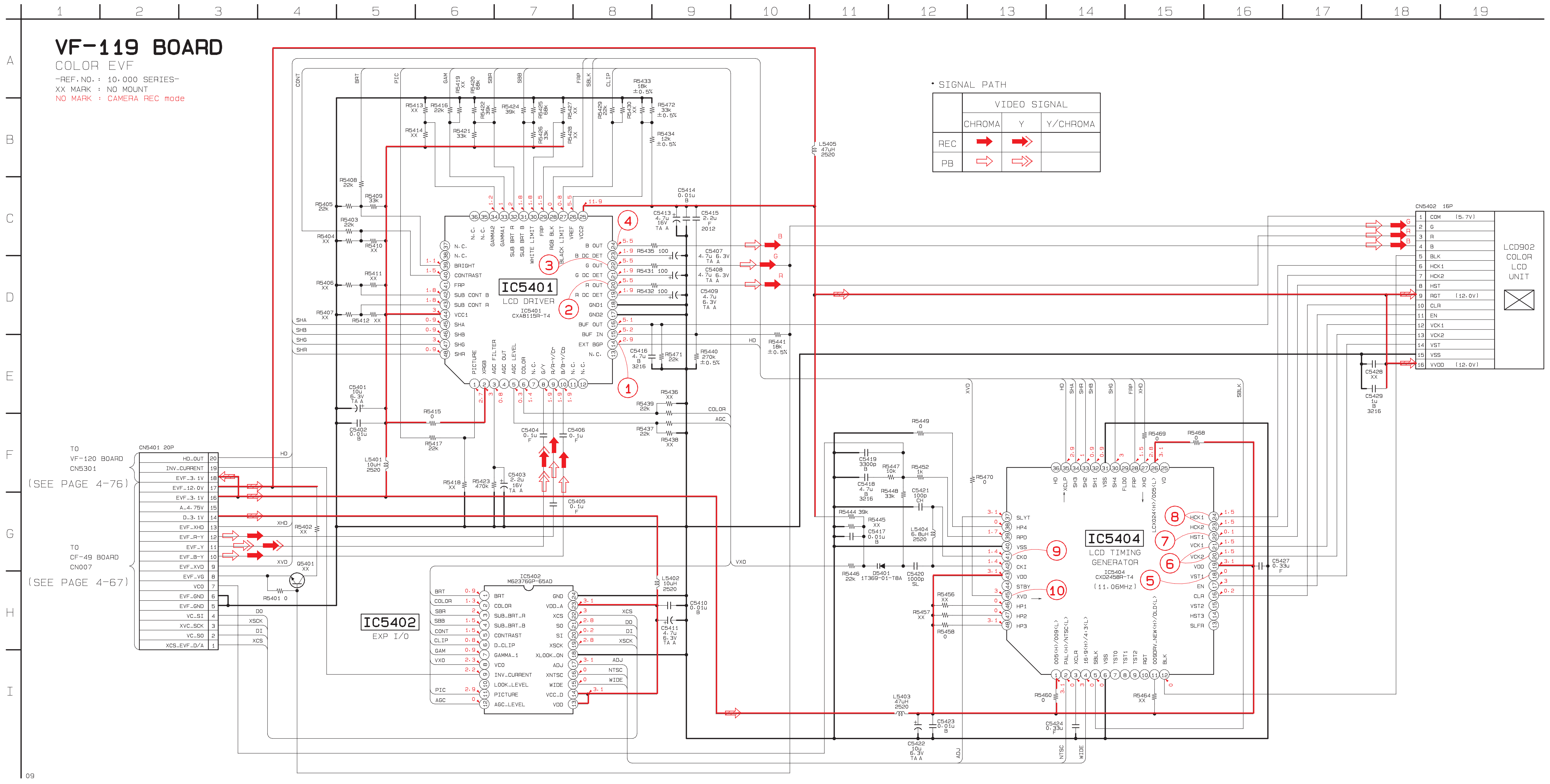
VC-119 BOARD

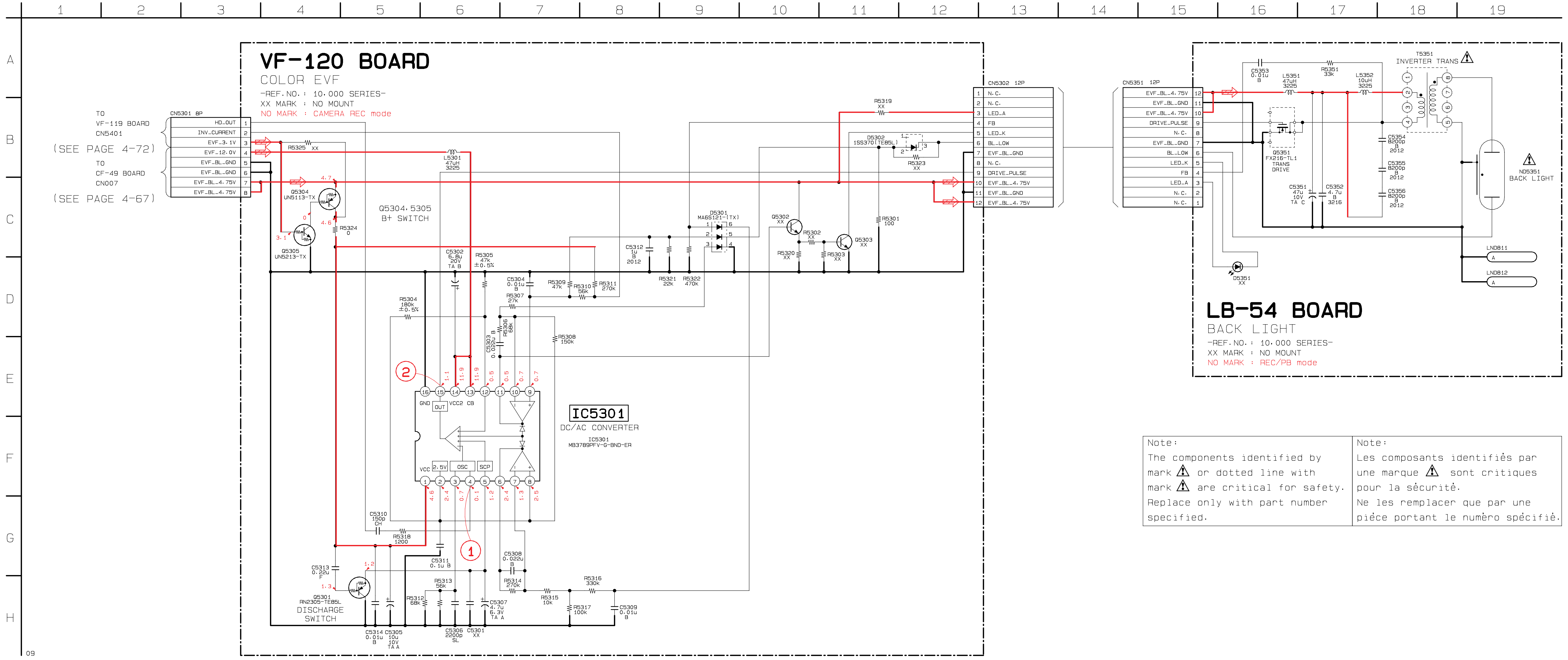
C5401	C-2
C5402	B-2
C5403	A-3
C5404	B-3
C5405	B-3
C5406	B-3
C5407	C-3
C5408	C-3
C5409	B-4
C5410	C-4
C5411	C-4
C5413	C-3
C5415	C-3
C5416	B-4
C5417	B-1
C5418	B-2
C5419	B-1
C5420	B-1
C5421	B-1
C5422	A-2
C5423	A-2
C5424	A-1
C5427	A-4
C5428	A-1
C5429	A-1
CN5401	B-1
CN5402	A-4
D5401	B-1
IC5401	B-3
IC5402	C-4
IC5404	A-1
L5401	C-2
L5402	C-3
L5403	A-2
L5404	B-1
L5405	B-4
Q5401	C-1
R5401	C-2
R5402	C-1
R5403	C-1
R5404	C-1
R5405	C-2
R5406	A-2
R5407	A-2
R5408	C-1
R5409	C-2

R5410	C-1
R5411	B-2
R5412	B-2
R5414	C-2
R5414	C-2
R5415	B-2
R5416	C-1
R5417	B-3
R5418	B-3
R5418	C-2
R5419	C-1
R5420	C-1
R5421	C-1
R5422	C-1
R5423	A-3
R5424	C-1
R5425	C-1
R5426	C-1
R5427	C-2
R5428	C-2
R5429	C-1
R5430	C-1
R5431	B-2
R5432	B-2
R5433	C-2
R5434	C-2
R5435	B-2
R5436	B-2
R5437	B-2
R5438	B-2
R5439	B-2
R5440	C-2
R5441	C-2
R5444	B-1
R5445	B-1
R5446	B-1
R5447	B-1
R5448	B-1
R5449	B-2
R5452	B-2
R5456	A-4
R5457	A-4
R5458	A-4
R5460	A-1
R5464	A-1
R5468	A-2
R5469	A-4
R5470	B-1
R5471	B-4
R5472	C-2

VF-119 BOARD CAMERA REC

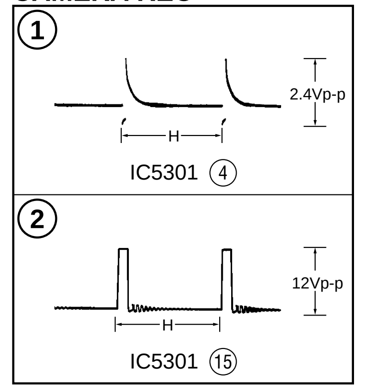






Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

VF-120 BOARD
CAMERA REC



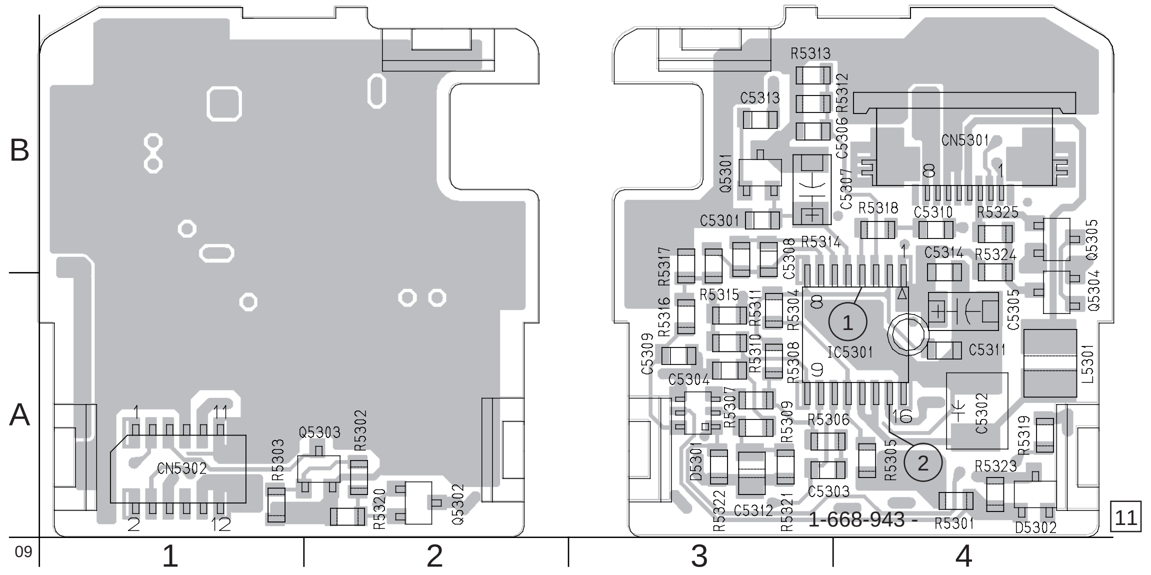
VF-120 (COLOR EVF), LB-54 (BACK LIGHT) PRINTED WIRING BOARDS

– Ref No. VF-120 BOARD: 10,000 series, LB-54 BOARD: 10,000 series –

VF-120 BOARD

C5301	B-3	R5304	A-3
C5302	A-4	R5305	A-4
C5303	A-4	R5306	A-4
C5304	A-3	R5307	A-3
C5305	A-4	R5309	A-3
C5306	B-4	R5310	A-3
C5307	B-4	R5311	A-3
C5308	B-3	R5312	B-4
C5309	A-3	R5313	B-4
C5310	B-4	R5314	B-3
C5311	A-4	R5315	B-3
C5312	A-3	R5316	A-3
C5313	B-3	R5317	B-3
		R5318	B-4
CN5301	B-4	R5319	A-4
CN5302	A-1	R5320	A-2
		R5321	A-3
D5301	A-3	R5322	A-3
D5302	A-4	R5323	A-4
		R5324	A-4
IC5301	A-4	R5325	B-4
L5301	A-4		
Q5301	B-3		
Q5302	A-2		
Q5303	A-2		
Q5304	A-4		
Q5305	B-4		
R5302	A-2		
R5302	A-4		
R5303	A-1		
R5303	A-3		

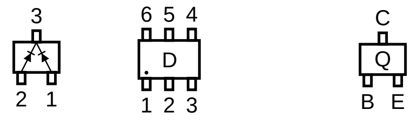
VF-120 BOARD (SIDE B) VF-120 BOARD (SIDE A)



- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

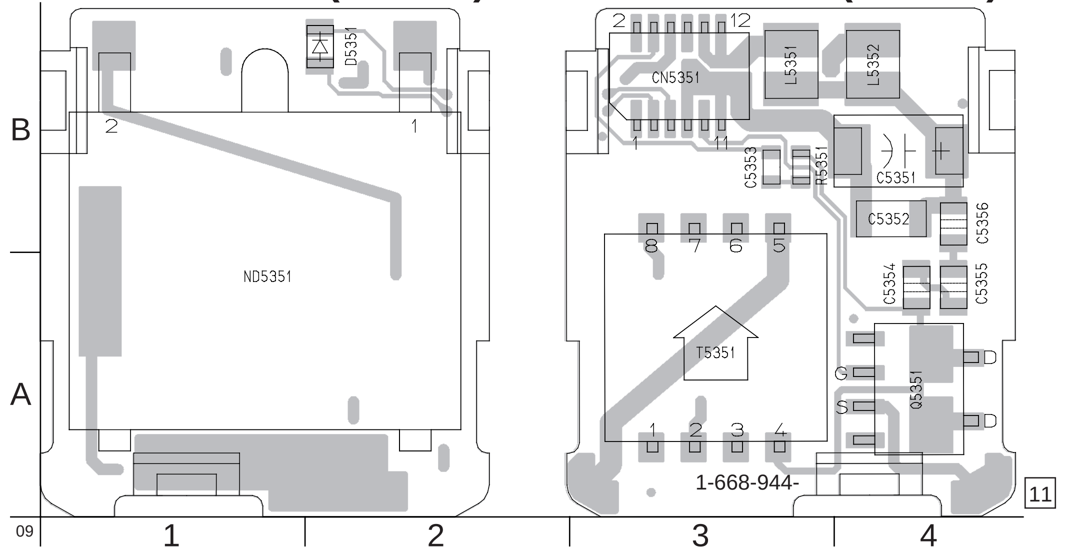
- Chip diode
- Chip transistor

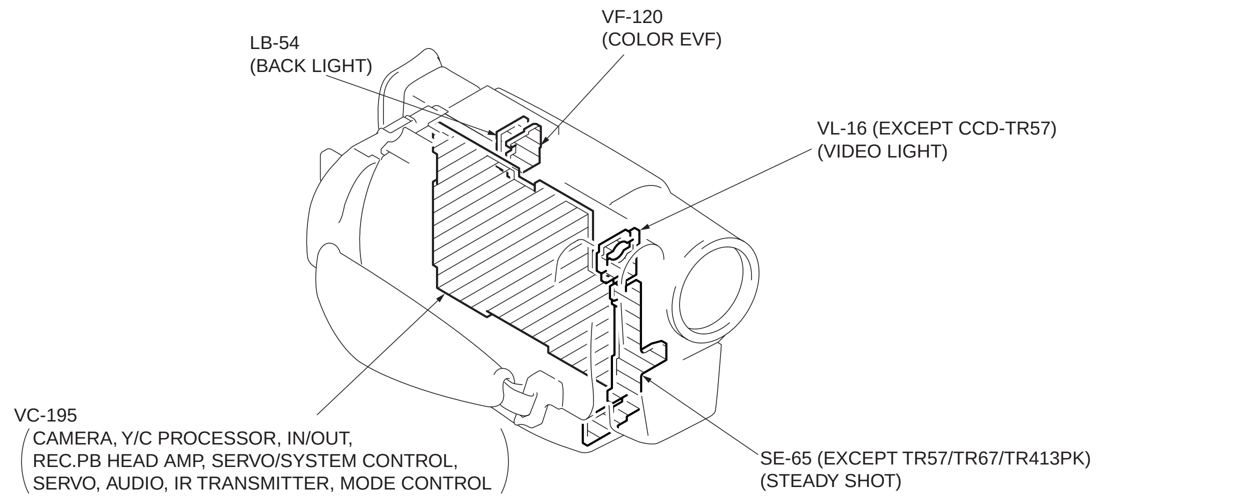


LB-54 BOARD

C5351	B-4
C5352	B-4
C5353	B-3
C5354	A-4
C5355	A-4
C5356	B-4
CN5351	B-3
D5351	B-2
L5351	B-3
L5352	B-4
ND5351	A-1
Q5351	A-4
R5351	B-3
T5351	A-3

LB-54 BOARD (SIDE B) LB-54 BOARD (SIDE A)





DD-105 BOARD

C801	E-3
C802	E-3
C803	D-3
C804	E-3
C805	E-3
C806	E-3
C807	E-2
C808	E-3
C809	D-2
C810	D-3
C811	D-2
C812	D-4
C813	D-2
C814	E-8
C815	C-4
C816	E-9
C817	E-8
C819	C-3
C820	C-3
C821	C-2
C822	E-8
C823	C-4
C824	C-2
C825	B-3
C826	D-8
C827	E-2
C828	E-2
C829	E-2
C830	D-2
C831	E-2
C832	B-3
C833	B-3
C834	C-4
C836	B-2
C837	C-2
C838	C-3
C840	D-8
C841	B-4
C843	C-4
C844	A-3
C846	B-3
C847	B-7
C848	B-7
C849	A-2
C850	A-3
C851	B-4
C852	B-8
C853	B-7
C854	B-3
C855	A-3
C856	E-3
C857	A-2
C860	A-6
C861	A-7
C862	A-2
C863	B-6
C864	A-5
C866	A-6
C867	A-7
C868	B-6
C869	A-6
C871	B-2
C872	F-4
C873	A-2
C874	A-7
C875	B-2
C876	C-6
C877	D-6
C885	A-6
CN801	C-6
CN931	C-5
CN932	F-6
CN933	A-4
CN934	D-9
CN935	G-7
D801	B-3
D802	C-3
D803	C-2
D804	C-2
D805	C-3
D806	B-2
D807	D-8
D809	B-7
D810	B-2
D812	B-3
D813	F-4
D814	F-4
D815	F-3
D816	E-3
D817	F-3
D818	D-2
D819	E-3
D838	E-9
D932	G-2
D933	F-4
D934	G-3
D935	F-3
D936	G-3
FB931	D-9
FB932	E-9
FB933	D-9
FB934	D-9
IC801	D-3
IC802	E-2

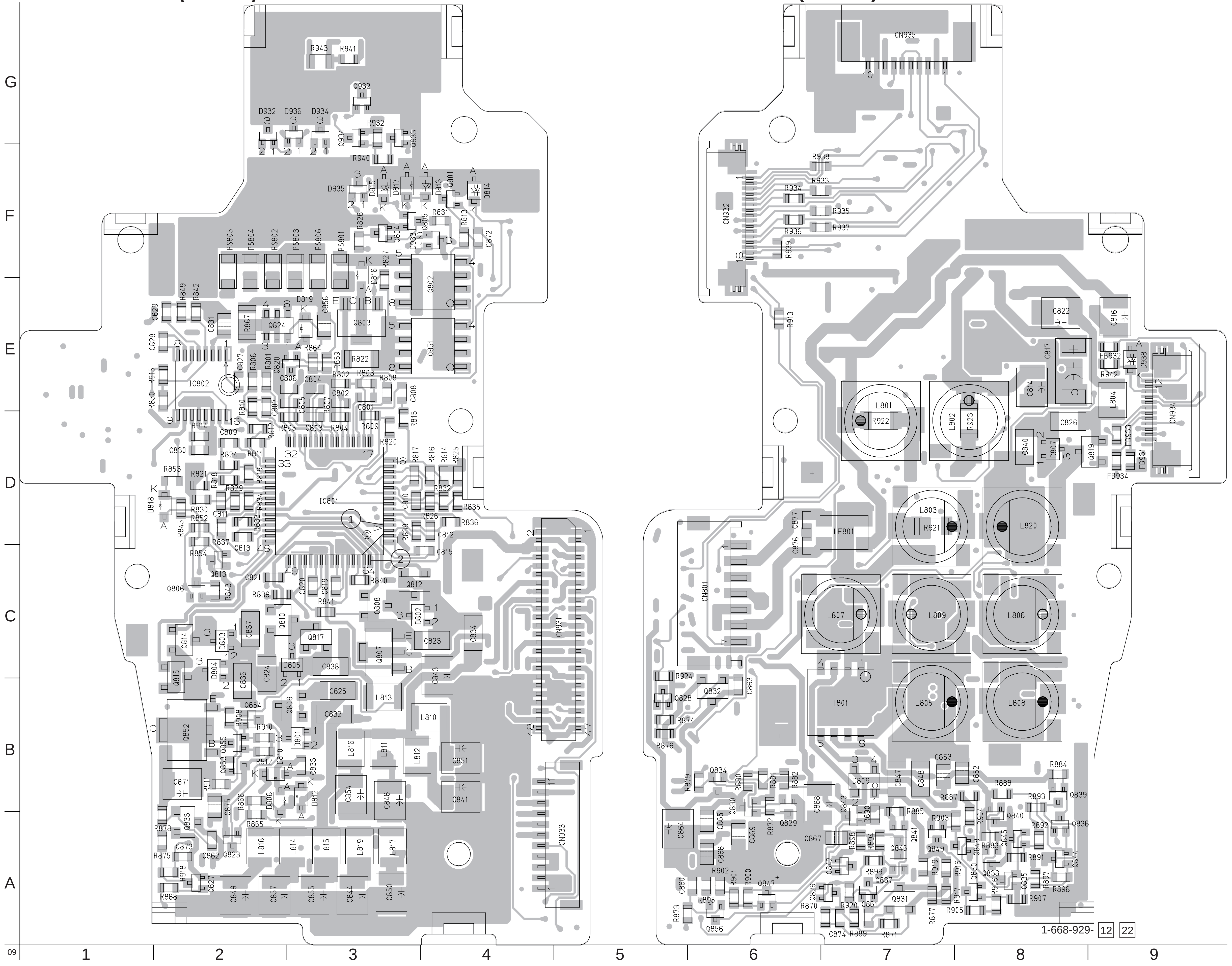
L801	D-7
L802	D-7
L803	D-8
L804	E-9
L805	B-7
L806	C-8
L807	C-7
L808	B-8
L809	C-7
L810	B-4
L811	B-3
L812	B-3
L813	B-3
L814	A-3
L815	A-3
L816	B-3
L817	A-3
L818	A-2
L819	A-3
L820	D-8
LF801	D-7
PS801	F-3
PS802	F-2
PS803	F-3
PS804	F-2
PS805	F-2
PS806	F-3
Q801	F-4
Q802	E-4
Q803	E-3
Q804	F-3
Q805	F-3
Q806	C-2
Q807	C-3
Q808	C-3
Q809	B-3
Q810	C-2
Q812	C-3
Q813	C-2
Q814	C-2
Q815	C-2
Q817	C-3
Q819	D-8
Q820	E-3
Q823	A-2
Q824	E-2
Q826	A-7
Q827	A-2
Q828	B-5
Q829	B-6
Q830	B-6
Q831	A-7
Q832	B-6
Q833	A-2
Q834	B-6
Q835	A-8
Q836	A-8
Q837	A-7
Q838	A-8
Q839	B-8
Q840	A-8
Q841	A-7
Q842	A-7
Q843	A-7
Q844	A-8
Q845	A-8
Q846	A-7
Q847	A-6
Q848	A-8
Q849	A-7
Q850	A-8
Q851	E-4
Q852	B-2
Q853	B-2
Q854	B-2
Q855	B-2
Q856	A-6
Q932	G-3
Q933	G-3
Q934	G-3
R801	E-2
R802	E-3
R803	E-3
R804	D-3
R805	D-3
R807	E-3
R808	E-2
R808	E-3
R809	D-3
R810	E-2
R811	D-2
R812	D-2
R813	F-4
R814	D-4
R815	D-3
R816	D-4
R817	D-3
R818	D-2
R819	D-2
R820	D-3
R821	D-2
R822	E-3
R822	D-7
R822	D-8

R823	D-7
R824	D-2
R825	D-4
R826	D-4
R827	E-3
R828	F-3
R829	D-2
R830	D-2
R831	F-4
R832	D-4
R833	D-2
R834	D-2
R835	D-4
R836	D-4
R837	D-2
R838	D-3
R839	C-2
R840	C-3
R841	C-3
R842	E-2
R843	C-2
R849	E-2
R850	E-2
R852	D-2
R853	D-2
R854	D-2
R854	D-2
R859	E-3
R864	E-3
R865	A-2
R866	B-2
R867	E-2
R868	A-2
R870	A-7
R871	A-7
R872	B-6
R873	A-5
R874	B-5
R875	A-2
R876	B-5
R877	A-7
R878	A-2
R879	B-6
R880	B-6
R881	B-6
R882	B-6
R883	A-8
R884	B-8
R885	B-7
R887	B-8
R888	B-8
R889	A-7
R890	A-7
R891	A-8
R892	A-8
R893	B-8
R894	A-7
R895	A-6
R896	A-8
R897	A-8
R898	A-7
R899	A-7
R900	A-6
R901	A-6
R902	A-6
R903	A-8
R904	A-8
R905	A-8
R906	A-8
R907	A-8
R908	B-2
R910	B-2
R911	B-2
R912	B-2
R913	E-6
R914	D-2
R915	E-2
R916	A-7
R917	A-7
R918	A-2
R919	A-7
R920	A-7
R924	C-5
R932	G-3
R933	F-7
R934	F-6
R935	F-7
R936	F-6
R937	F-7
R938	F-7
R939	F-6
R940	F-3
R941	G-3
R942	E-9
R943	G-3
T801	B-7

DD-105 (POWER) PRINTED WIRING BOARD

– Ref No. DD-105 BOARD: 2,000 series –

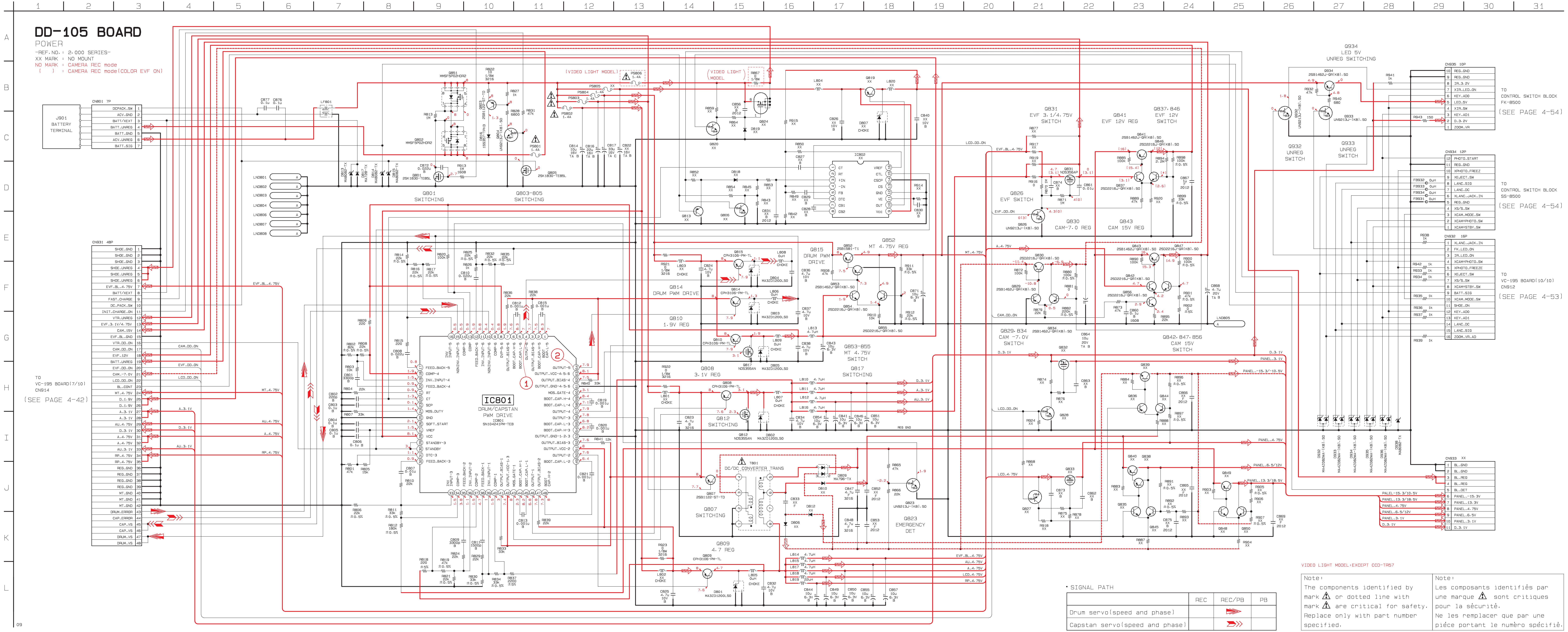
DD-105 BOARD (SIDE B) DD-105 BOARD (SIDE A)



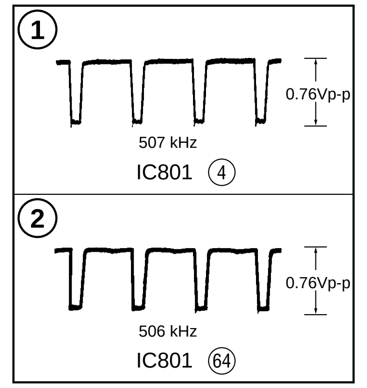
DD-105 BOARD

POWER

-REF.NO.: 2,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
( ) : CAMERA REC mode(COLOR EVF ON)



DD-105 BOARD
CAMERA REC



VIDEO LIGHT MODEL:EXCEPT CCD-TR57

• SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		⇛	
Capstan servo(speed and phase)		⇛»	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 5
ADJUSTMENTS

Refer to page 3 as Table for distinction functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Color monitor
- Vectorscope
- Adjusting driver
- Regulated power supply
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly) Note 1	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	CPC-7 jig	J-6082-382-A	For the color viewfinder adjustment For adjusting the video section
J-8	Power code Note 2	J-6082-223-A	For connecting the battery terminal and DC power supply
J-9	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-10	Clear chart	J-6080-621-A	
J-11	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-181 board (CN401) and VC-195 board (CN501)
J-12	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter
J-13	Extension cable (48P, 0.8 mm)	J-6082-188-A	For extension between the DD-105 board (CN931) and VC-195 board (CN914)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side.

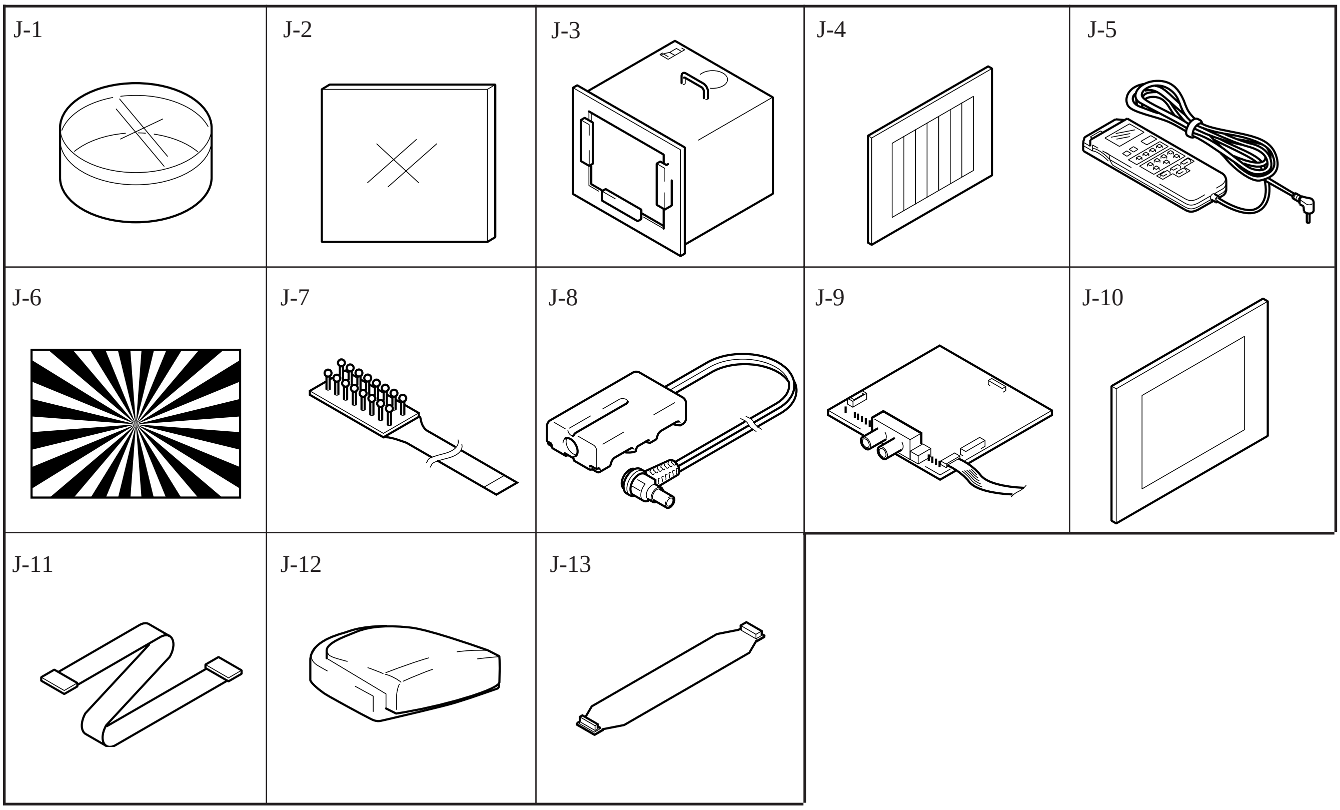


Fig. 5-1-1.

5-1. CAMERA SECTION ADJUSTMENT

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 5-1-3.
2) By setting the "Forced Camera Power ON mode", the camera power can be turned ON even if the front panel block (MA-311 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
   1. VC-195 board CN903 (23P 0.5mm)
3) Video light (Video light model) need not be assembled. If removing it. disconnect the following connector.
   1. VC-195 board CN909 (10P, 0.5mm)

Note 3: As removing the cabinet (R) (removing the VC-195 board CN911) means removing the lithium 3V power supply (CF-49 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the "Service Mode" of "VIDEO SECTION ADJUSTMENT" for the data on the history use.)

Note 4: Setting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note 5: Exiting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

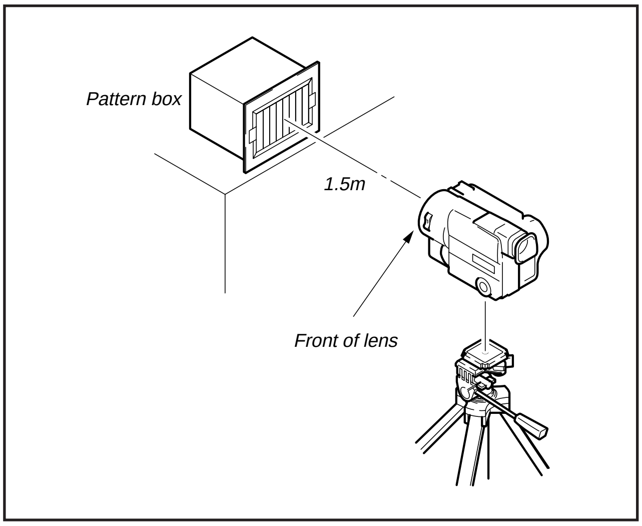
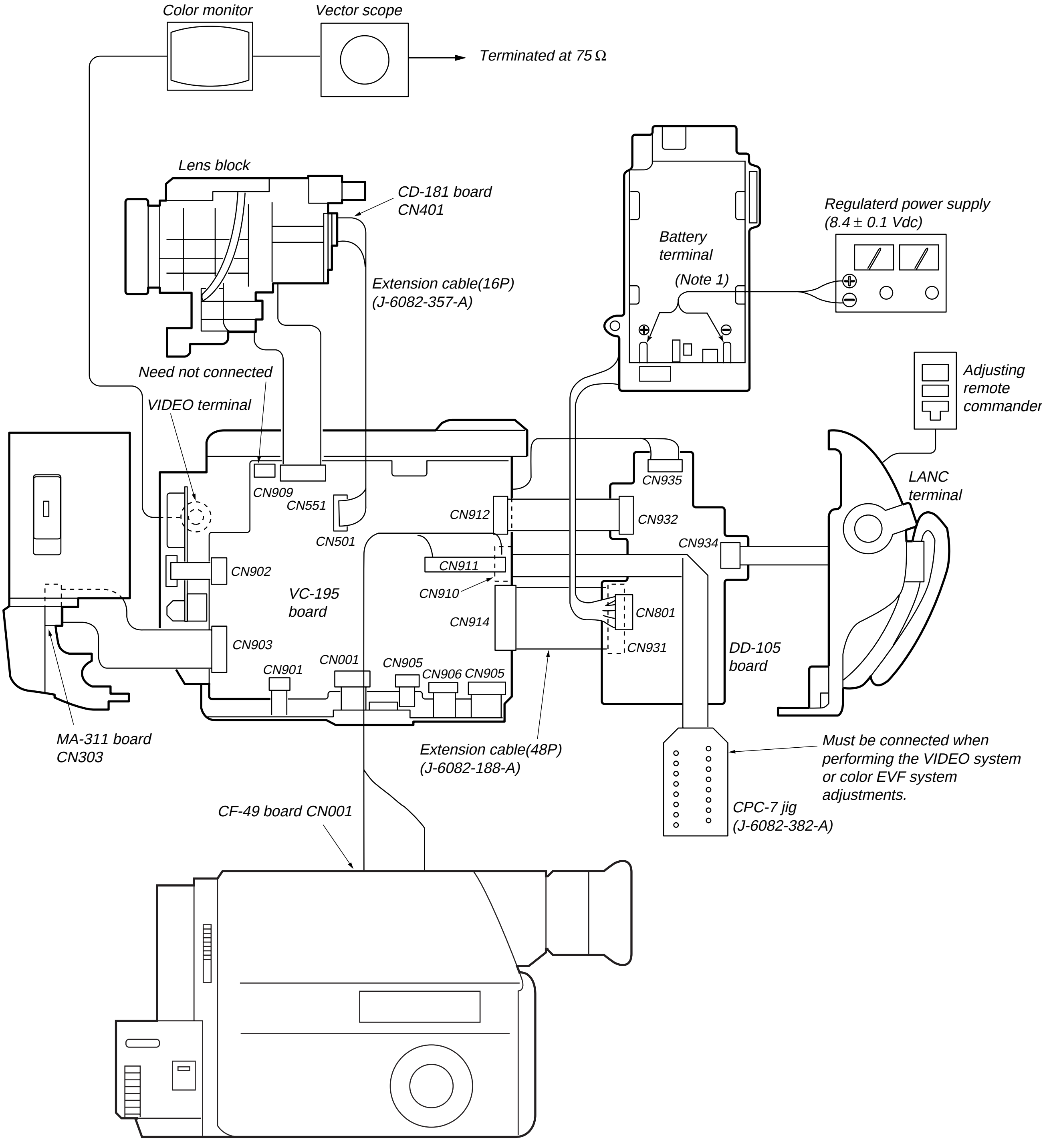


Fig. 5-1-2.



Note 1: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side or use the AC power adaptor.

Fig. 5-1-3.

1-1-3.Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (MA-311 board) .... CAMERA
2. NIGHT SHOT switch (Lens block) .... OFF
   (Night shot model)
3. VIDEO LIGHT switch (MA-311 board) .... OFF
   (Video light model)
4. DEMO MODE (Menu display) .... OFF
5. DIGITAL ZOOM (Menu display) .... OFF
6. STEADY SHOT (Menu display) .... OFF
7. FOCUS switch (MF-8500) .... MANUAL
   (Manual focus model)
8. PROGRAM AE (CF-49 board) .... Auto
9. BACK LIGHT (CF-49 board) .... OFF
10. PICTURE EFECT (CF-49 board) .... OFF
11. 16 : 9 WIDE (MENU display) .... OFF

2. Adjusting Procedure

Adjust in the given order.

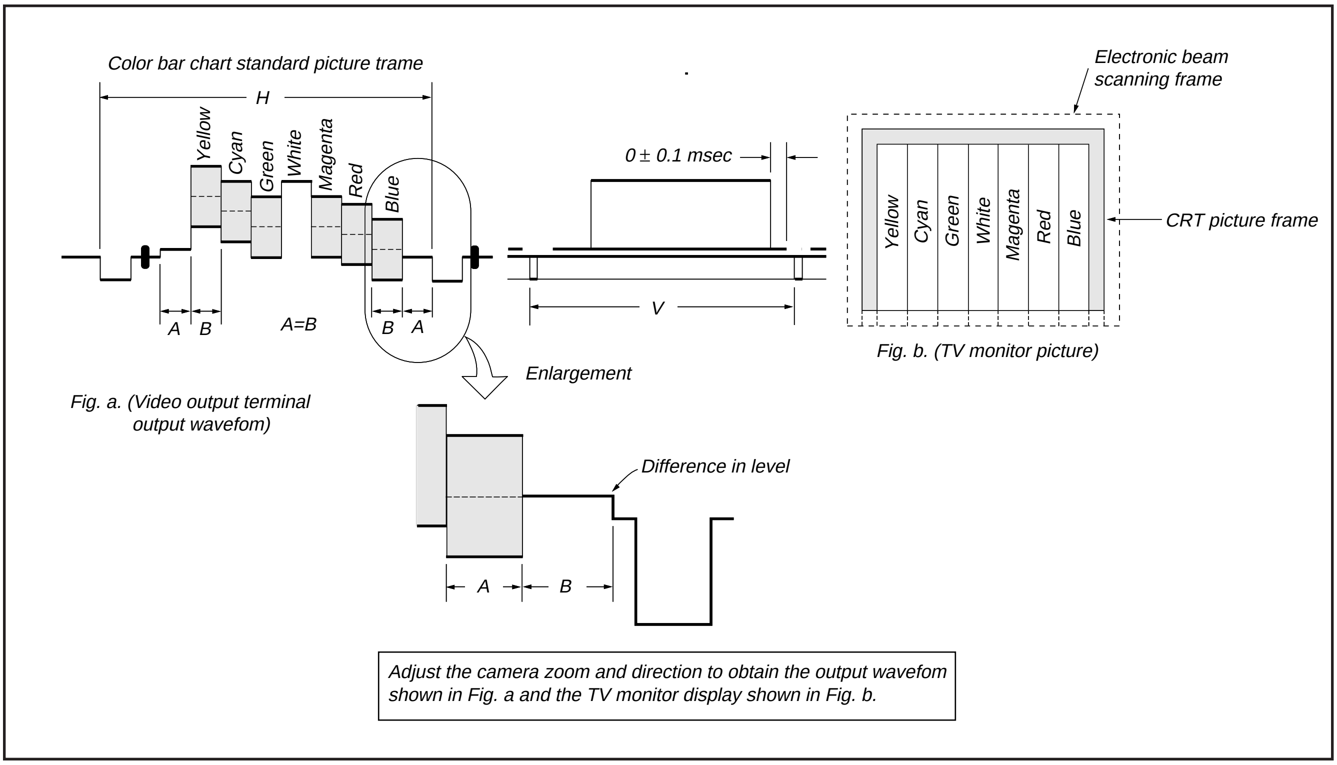


Fig. 5-1-4.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 5-1-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-5.

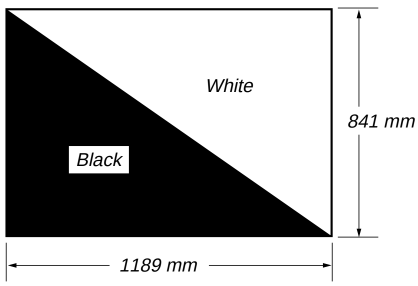


Fig. 5-1-5.

Note : Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the LANC terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-6.

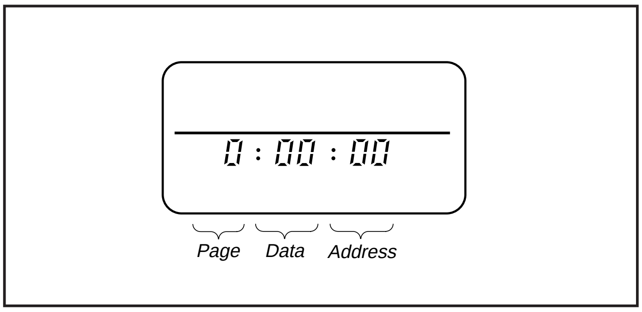


Fig. 5-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 0, address: 01, and set the data to 01, and enables Page D and E, F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 0, address: 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-2. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② ↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote commander display.

(Example) In the case that the DDS display and the adjusting remote commander display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 5-1-2.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initializing the D,E,F Page Data

Note 1: If "Initializing the D, E, F Page Data" is performed, all data of the D page, E page and F page will be initialized. (It is impossible to initialize a single page.)

Note 2: If the D,E,F page data has been initialized, „Modification of D, E, F Page Data" and all adjustments need to be performed again.

Adjusting page	D
Adjusting Address	00 to 6F
Adjusting page	F
Adjusting Address	00 to FF
Adjusting page	E
Adjusting Address	00 to FF

Initializing Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 00, and set data: 55.
3) Select page: 2, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 02, and check that the data is 01.
5) Select page: 3, address: 00, and set data: 29.
6) Select page: 3, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.
8) Perform „Modification of D,E,F Page Data".

2. Modification of D, E, F Page Data

If the D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note : If copy the data built in the different model, the camcorder may not operate.

3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
5) After compleating "Modification of D, E, F Page Data", select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3. D Page Table

Note1 :

Fixed data-1 : Initialized data.
(Refer to "1. Initializing the D,E,F Page Data".)

Fixed data-2 : Modified data.
(Refer to "2. Modification of D, E, F Page Data").

Address	Initial Value	Remark
00 to 0F		
10	00	Fixed data-1 (Initialized data)
11	00	
12	00	
13		Fixed data-2 (Modified data, copy the data built in the same model.)
14		
15		
16		
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
2A		Fixed data-1 (Initialized data)
2B		
2C		
2D		
2E		Fixed data-2
2F		
30	88	Battery end adj.
31	8D	
32	A8	
33	BD	
34	C8	
35		Fixed data-2 (Modified data, copy the data built in the same model.)
36		
37		
38		
39		
3A		
3B		
3C		
3D		
3E		
3F		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
4A		

Address	Initial Value	Remark
4B		Fixed data-1 (Initialized data)
4C		
4D		
4E		
4F		
50		Fixed data-2 (Modified data, copy the data built in the same model.)
51		
52		
53		
54		
55		
56		
57		
58		
59		
5A		
5B		
5C		
5D		
5E		
5F		
60		Fixed data-1 (Initialized data)
61		
62		
63		
64		
65		
66		
67		
68		
69		
6A		
6B		
6C		
6D		
6E		
6F		

4. F Page table

Note 1:

Fixed data-1 : Initialized data.
(Refer to "1. Initializing the D,E,F Page Data".)

Fixed data-2 : Modified data.
(Refer to "2. Modification of D, E, F Page Data").

Note 2: There are two models classified by CCD imager types as shown below, and the initial value of adjustment is different according to the model.

510H model : CCD-TR57/TR67/TR413PK

760H model : CCD-TR87/TR414PK/TR917/TR940/TR940PK

Note 3 : There are two models classified by VTR formats as shown below, and the initial value of adjustment is different according to the model.

Hi8 model : CCD-TR917/ TR940/ TR940PK

Standard8 model : CCD-TR57/ TR67/ TR87/ TR413PK/ TR414PK

Address	Initial Value	Remark
00 to 0F		
10	00	Emergency memory address
11	00	
12	00	
13	00	
14	00	
15	00	
16	00	
17	00	
18	00	
19	00	
1A	00	
1B	00	
1C		Fixed data-2
1D		
1E		
1F		Fixed data-1
20		Fixed data-2
21	D2	G-CAM flip adj.
22		Fixed data-2
23		
24		Fixed data-1
25		(Color reproduction adj.)
26		Fixed data-2
27		
28		
29		Fixed data-1
2A		
2B		Fixed data-2
2C	A0	28MHz origin osc. adj.
2D		Fixed data-2
2E		Fixed data-1
2F	80	Hall adj.
30	80	
31	18/08	Max gain adj. Note 2 : 510H model/ 760H model
32		Fixed data-1
33		
34	1B	Color reproduction adj.
35		Fixed data-1
36	42	Color reproduction adj.
37		Fixed data-1
38		
39		
3A	89	Auto white balance adj.
3B	59	
3C	38	IRIS IN/OUT adj.
3D	41	

Address	Initial Value	Remark
3E	25	Flange back adj.
3F	00	
40	19	
41	00	
42	35	
43	52	Angular velocity sensor sensitivity adj.
44	52	
45	7A	1.5MHz deviation adj.
46	8D	1.7MHz deviation adj.
47	7A	BPF f0 adj.
48		Fixed data-1
49	6B	Y OUT level adj.
4A	40	AFC f0 adj.
4B	9A	C OUT level adj.
4C		Fixed data-1
4D	7B	Filter f0 adj.
4E	60	RP filter f0 adj.
4F		Fixed data-1
50		
51		
52		
53	40	REC Y current adj. (Address 57 to 5A are fixed data addresses.) Note 3 : Hi8 model/ Standard8 model
54	40	
55	5F	
56	5F	
57	A0/80	
58	80	
59	90/80	
5A	80	
5B	50	REC L level adj. (Address 63 and 64 are fixed data addresses.) Note 3 : Hi8 model/ Standard8 model
5C	50	
5D	43	
5E	43	
5F	66	
60	66	
61	67	
62	67	
63	7C/80	
64	78/80	
65	80	REC C current adj.
66	41	IR video deviation Adj.
67	33	IR audio deviation Adj.
68	C7	IR video carrier freq. Adj.
69	3C	CAP FG offset adj.
6A		Fixed data-1
6B		
6C		
6D		
6E		
6F		
70	3B	AWB standard data input adj.
71	FF	
72	56	
73	7D	
74		Fixed data-1
75		
76	1B	Flange back adj.
77	54	
78	25	
79	80	
7A	10	
7B	FF	

Address	Initial Value	Remark
7C	0A	Switching position adj.
7D	00	
7E	0A	
7F	00	
80		Fixed data-2
81		
82		Fixed data-1
83		
84		Fixed data-2
85		Fixed data-1
86		Fixed data-2
87		Fixed data-1
88		
89		
8A		
8B		
8C		
8D		
8E		Fixed data-2
8F		Fixed data-1
90		
91		
92		
93		
94		
95		
96		
97		
98		Fixed data-2
99		Fixed data-1
9A		Fixed data-2
9B		Fixed data-1
9C		Fixed data-2
9D		Fixed data-1
9E		Fixed data-2
9F		Fixed data-1
A0		Fixed data-2
A1		
A2		
A3		Fixed data-1
A4		
A5		
A6		Fixed data-2
A7		Fixed data-1
A8		Fixed data-2
A9		
AA		Fixed data-1
AB		
AC		Fixed data-2
AD		Fixed data-1
AE		Fixed data-2
AF		Fixed data-1
B0		
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
BA		
BB		
BC		
BD		

Address	Initial Value	Remark
BE		Fixed data-2
BF		Fixed data-1
C0		
C1		
C2		
C3		
C4		
C5		Fixed data-2
C6		Fixed data-1
C7		
C8		
C9		Fixed data-2
CA		Fixed data-1
CB		
CC		
CD		
CE		
CF		
D0		
D1		
D2		
D3		
D4		
D5		
D6		
D7		
D8		
D9		Fixed data-2
DA		Fixed data-1
DB		
DC		Fixed data-2
DD		Fixed data-1
DE		
DF		
E0		
E1		
E2		
E3		Fixed data-2
E4		
E5		Fixed data-1
E6		Fixed data-2
E7		Fixed data-1
E8		
E9		
EA		
EB		Fixed data-2
EC		
ED		Fixed data-1
EE		
EF		
F0		
F1		
F2		Fixed data-2
F3		Fixed data-1
F4		
F5	FF	Color reproduction adj.
F6	F6	
F7		Fixed data-1
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

5. E Page Table

Note 1:

Fixed data-1 : Initialized data.
(Refer to "1. Initializing the D,E,F Page Data".)

Fixed data-2 : Modified data.
(Refer to "2. Modification of D, E, F Page Data").

Address	Initial Value	Remark
00		Fixed data-1
01		
02		
03		
04		
05		
06		
07		
08		
09		
0A		
0B		
0C		
0D		
0E		
0F		
10		
11		
12		
13		
14		Fixed data-2
15		Fixed data-1
16		
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
2A		
2B		Fixed data-2
2C		
2D		
2E		
2F		Fixed data-1
30		
31		
32		
33		
34		
35		
36		
37		

Address	Initial Value	Remark
38		Fixed data-2
39		
3A		
3B		Fixed data-1
3C		
3D		
3E		
3F		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		Fixed data-2
50		Fixed data-1
51		
52		Fixed data-2
53		Fixed data-1
54		
55		
56		
57		
58		
59		Fixed data-2
5A		Fixed data-1
5B		
5C		Fixed data-2
5D		Fixed data-1
5E		
5F		
60		Fixed data-2
61		
62		
63		Fixed data-1
64		Fixed data-2
65		
66		
67		Fixed data-1
68		
69		
6A		
6B		
6C		
6D		
6E		
6F		
70		
71		
72		
73		Fixed data-2
74		Fixed data-1
75		Fixed data-2
76 to 99		Fixed data-1

Address	Initial Value	Remark
9A		Fixed data-2
9B		Fixed data-1
9C		Fixed data-2
9D		Fixed data-1
9E		
9F		
A0		Fixed data-2
A1		Fixed data-1
A2		
A3		
A4		
A5		
A6		
A7		
A8		
A9		
AA		
AB		
AC		
AD		
AE		
AF		
B0		
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
BA		
BB		
BC		Fixed data-2
BD		
BE		
BF		Fixed data-1
C0		
C1		
C2	B0	VCO adj. (Color EVF)
C3	80	Bright adj. (Color EVF)
C4	77	Contrast adj. (Color EVF)
C5	80	White balance adj. (Color EVF)
C6	80	
C7		Fixed data-2
C8		
C9		
CA		
CB		
CC	B0	Backlight consumption current adj. (Color EVF)
CD		Fixed data-1
CE		
CF		
D0		
D1		
D2		
D3		
D4		
D5		
D6		
D7		
D8		

Address	Initial Value	Remark
D9		Fixed data-1
DA		
DB		
DC		
DD		
DE		
DF		
E0		
E1		
E2		
E3		
E4		
E5		
E6		
E7		
E8		
E9		
EA		Fixed data-2
EB		Fixed data-1
EC		
ED		
EE		
EF		Fixed data-2
F0		Fixed data-1
F1		
F2		
F3		Fixed data-2
F4		Fixed data-1
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC to FF		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, Check that the specified value of "28MHz Origin Oscillation Adjustment", "Y OUT level Adjustment" and "C OUT level Adjustment" of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. G-CAM flip Adjustment

Set the color reproduction conditions to optimum.

Subject	Color bar chart standard picture frame
Measurement Point Measuring Instrument	Display data of page 1 of the adjusting remote commander (Note 1)
Adjustment Page	F
Adjustment Address	21

Note 1. Displayed data of page 1 of the adjusting remote commander.

1 : XX : XX
→ S2 (lower XX)
→ S1 (upper XX)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 16.
3) Select page: F, address: 21, set data: D2, and press the PAUSE button of the adjusting remote commander.
4) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-degits display data.

When S1<S2
Perform steps 5) onwards.
When S1≧S2
Perform steps "Processing after Completing Adjustments".

5) Select page: F, address: 21, set data: 52, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: 0, address: 03, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

2. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point Measuring Instrument	DDS display data of EVF or TV monitor (Note 3)
Adjustment Page	F
Adjustment Address	2F, 30
Specified Value	90 to 94 during IRIS OPEN (Note 1) 19 to 1D during IRIS CLOSE (Note 2)

Note 1: Select page: 2, address: 01, set data: 01, and press the PAUSE button of the adjusting remote commander.

Note 2: Select page: 2, address: 01, set data: 03, and press the PAUSE button of the adjusting remote commander.

Note 3: DDS display data of EVF or TV monitor.

00 00XX
→ Object data (XX)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 03.
3) Select page: D, address: 11, set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
5) Select page: F, address: 30, set data: 80, and press the PAUSE button.
6) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and this data is named K_2.
8) Select page: F, address: 2F, set data: 30, and press the PAUSE button.
9) Read the DDS display data, and this data is named K_1.
10) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
11) Read the DDS display data, and this data is named W_1.
12) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
13) Read the DDS display data, and this data is named W_2.
14) Convert W_1, W_2, K_1, K_2, to decimal notation, and obtain W_1' , W_2' , K_1' , K_2'. (Refer to Table 5-1-2. "Hexadecimal notation - decimal notation conversion table" of "Service mode".)
15) Calculate X_1' using the following equations (decimal notation calculation).

$A' = W_2' + K_1' - W_1' - K_2'$ Equation 1

$B' = W_1' - K_1'$ Equation 2

$X_1' = [1904 + (48 \times A') - (16 \times B')] / A'$ Equation 3

16) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
17) Select page: F, address: 2F, set data: X_1, and press the PAUSE button.
18) Select page: 2, address: 01, and set data: 01, and press the PAUSE button.
19) Select page: F, address: 30, change the data and adjust the DDS display data to "92".
20) Press the PAUSE button of the adjusting remote commander.
21) Select page: 2, address: 01, and set data: 03, and press the PAUSE button.

22) Read the DDS display data, and this data is named K_0. If K_0 lies within the “19” to “1D” range, perform “Processing after completing adjustments”. If it is lies outside the range, perform the following adjustments.
23) Convert K_0 to decimal notation, and obtain K_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

$C' = 146 - B' - K_0'$ Equation 4

$X_2' = [(119 - B') \times (X_1' - 48) + (48 \times C')] / C'$ Equation 5

(X_1' and B’ are values obtained from equations 2) and 3))
25) Convert X_2' to hexadecimal notation, and obtain X_2.
(Round off to one decimal place)
26) Select page: F, address: 2F, set data: X_2, and press the PAUSE button.
27) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
28) Select page: F, address: 30, change the data and adjust the DDS display data to “1B”.
29) Press the PAUSE button of the adjusting remote commander.
30) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
31) Check the DDS display data lies within the “90” to “94” range.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button.
4) Select page: 0, address: 03, and set data: 00.

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment(1)

Subject	Flange back adjustment chart (2.0 m from the front of the lens) (Luminance: 200 ± 50 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:
1) NIGHT SHOT switch .... OFF

Adjusting method:
1) Check that at both the zoom lens TELE end and WIDE end, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
2) Select page: 0, address: 01, and set data: 01.
3) Check that the data of page: F, address: 3E to 42, 76 to 7B is the initial value (See table below).

Address	Data	Address	Data
3E	25	77	54
3F	00	78	25
40	19	79	80
41	00	7A	10
42	35	7B	FF
76	1B		

4) Select page: 2, address: 02, and check that the data is “00 “.
5) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 01, set data: 15, and press the PAUSE button of the adjusting remote commander.
(The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is „01“.

Processing after Completing Adjustments
1) Turn OFF the main power supply (8.4V).
2) Perform “Flange Adjustment (2)”.

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:
1) NIGHT SHOT switch .... OFF

Adjusting method:
1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 2, address: 02, and check that the data is “00”.
4) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
5) Place a ND filter on the lens so that the optimum image is obtain.
6) Select page: 2, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
(The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
8) Select page: 2, address: 02, and check that the data is “01”.

Processing after Completing Adjustments
1) Select page: 0, address: 01, and set data: 00.
2) Turn OFF the main power supply (8.4V).
3) Perform “Flange Back Check”.

4. Flange Back Check

Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:
1) NIGHT SHOT switch .... OFF

Checking method:
1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3) Select page: 2, address: 40, and set data: 02.
4) Select page: 2, address: 41, and set data: 01.
5) Shoot the Siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note1).
8) Select page: 2, address: 21, and set data: 10.
9) Shoot the Siemens star with the zoom WIDE end.
10) Observe the TV monitor and check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjusting remote commander.
1) Select page: 0, address: 03, and set data: 0F.
2) Page 1 shows the state of the focus.

1 : 00 : XX → Odd: Focused
Even: Unfocused

Processing after Completing Adjustments
1) Select page: 2, address: 21, and set data: 00.
2) Select page: 0, address: 03, and set data: 00.
3) Select page: 2, address: 40, and set data: 00.
4) Select page: 2, address: 41, and set data: 00.

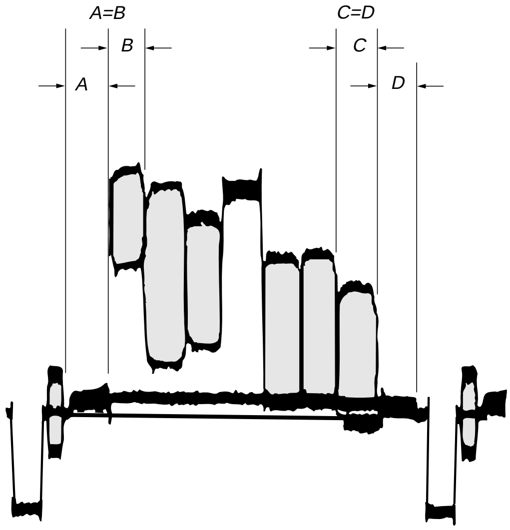
5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, t=0 ± 0.1msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color bar chart standard picture frame".

1. Horizontal period



2. Vertical period

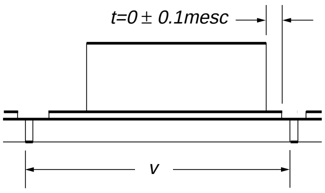


Fig. 5-1-7.

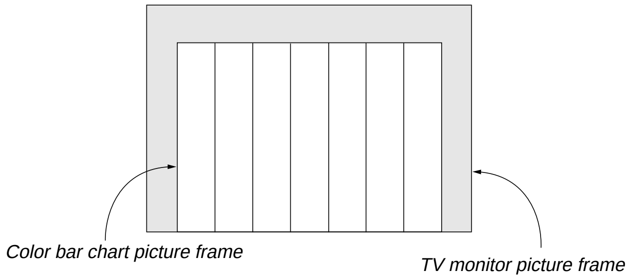


Fig. 5-1-8.

6. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	34, 36, F5, F6
Specified Value	All color luminance points should settle within each color reproduction frame.

Note1: 510H model (CCD-TR57/TR67/TR413PK)
760H model (CCD-TR87/TR414PK/TR917/TR940/TR940PK)

Switch setting:
1) NIGHT SHOT switch .... OFF

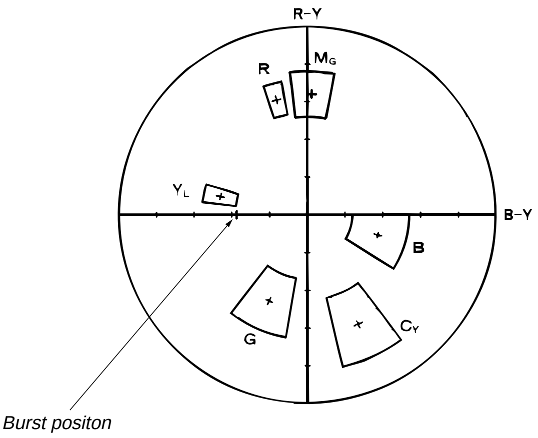
Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, set data: 3D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 25, set data: 3F, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of page: F, address: 34, 36, F5 and F6, and settle each color luminance point in each color reproduction frame.

Note 2: Be sure to press the PAUSE button of the adjusting remote commander before Changing the addresses. If not, the new data will not be written to the memory.

6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

For 510H model



For 760H model

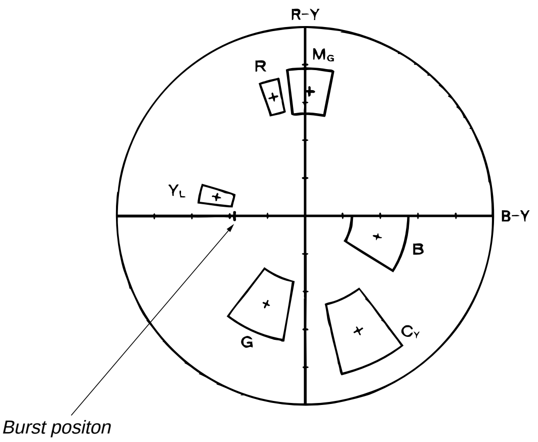


Fig. 5-1-9.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.
If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	3C, 3D

Note 1: The right four digits of the display data at the right bottom side of the EVF and TV monitor is the LIGHT LEVEL data.

00 XX XX
- Lower XX → Lower two digits
- Upper XX → Upper two digits

Switch setting:
1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch.. OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 06.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 01, set data: 0B, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to decimal notation, and obtain D_1'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table” of “Service mode”.)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation).
   When $D_2 \geqq D0$
   $D_3' = D_1' - 21$ .... Equation 1
   When $D_2 < D0$
   $D_3' = D_1' - 22$ .... Equation 2
9) Convert D_3' to hexadecimal notation, and obtain D_3.
10) Select page: F, address: 3C, set data: D_3, and press the PAUSE button of the adjusting remote commander.
11) Select page: 2, address: 01, set data: 09, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to decimal notation, and obtain D_4'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table” of “Service mode”.)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation).
   When $D_5 \geqq F0$
   $D_6' = D_4' - 13$ .... Equation 3
   When $D_5 < F0$
   $D_6' = D_4' - 14$ .... Equation 4
15) Convert D_6' to hexadecimal notation, and obtain D_6.
16) Select page: F, address: 3D, set data: D_6, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 0, address: 03, and set data: 00.

8. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	31
Specified Value	C0 to FF

Note 1: The right two digits of the display data at the right bottom side of the EVF and TV monitor is the object data.

00 00 XX
- XX → Object data

Note 2: 510H model : CCD-TR57/TR67/TR413PK
760H model : CCD-TR87/TR414PK/TR917/TR940/TR940PK

Switch setting:
1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch.. OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
3) Select of page: 0, address: 03, and set data: 01.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 56, and set data: 40.
6) Select page: 2, address: 01, set data: 19, and press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 31, set data: [18] <08>, and press the PAUSE button of the adjusting remote commander.
   Note : [ ] : 510H model
   : < > : 760H model
8) Check that the DDS display data (Note 1) lies within the specified value.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 2, address: 56, and set data: 00.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	70 to 73

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.
Note 2: Check that the data of page: 2, address: 02 is 00. If not, turn the power of the unit OFF/ON.

Switch setting:
1) NIGHT SHOT switch .... OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Wait for 2 seconds.
3) Select page: 2, address: 01, and set data: 11, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 0D, and press the PAUSE button of the adjusting remote commander.
(When the standard data is take in, the data will be automatically input to page: F, address: 70 to 73.)
5) Select page: 2, address: 02, and check that the data is "01".
6) Perform "Auto White Balance Adjustment".

Processing after Completing Adjustments
1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

10. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display of EVF or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3A, 3B
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.
Note 2: The right four digits of the display data at the right bottom side of the EVF and TV monitor is the object data.

00 XXXX → Object data

Switch setting:
1) NIGHT SHOT switch .... OFF

Adjusting method:
1) Place the C14 filter for color temperature correction on the lens.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 3F, and press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 03, and set data: 04.
6) Select page: F, address: 3A, and change the data, and adjust the average value of the DDS display data(Note 2) to the R ratio specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 03, and set data: 05.
9) Select page: F, address: 3B, and change the data, and adjust the average value of the DDS display data(Note 2) to the B ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 03, and set data: 00.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-10. A to C

Switch setting:
1) NIGHT SHOT switch.. OFF

Checking method:
1) Check that the lens is not covered with either filter.
2) Select page: 2, address: 01, set data: 0F, and press the PAUSE button of the adjusting remote commander.
3) Check that the center of the white luminance point is within the circle shown Fig. 5-1-10.A.
4) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 2, address: 01, set data: 23, and press the PAUSE button of the adjusting remote commander.
6) Place the C14 filter on the lens.
7) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-10.B.
8) Remove the C14 filter, and place the ND filter 1.3 (1.0 +0.3) on the lens.
9) Check that the white luminance point stopped moving, and then remove the ND filter 1.3.
10) Check that the center of the white luminance point settles within the circle shown Fig. 5-1-10.C.

Processing after Completing Adjustments
1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.

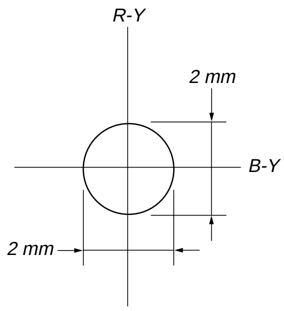


Fig.5-1-10. A

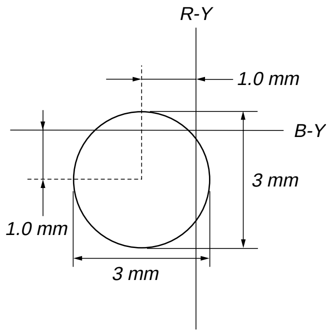


Fig.5-1-10. B

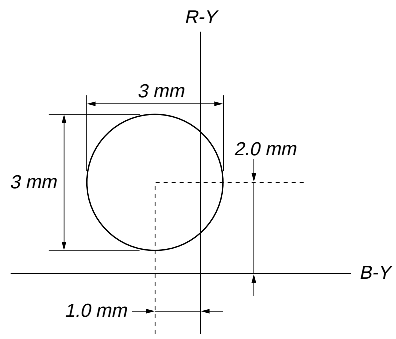


Fig.5-1-10. C

12. Angular Velocity Sensor Sensitivity Adjustment

- This adjustment is performed only when replacing the angular velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement
There are two types of repair parts.
TYPE A : ENC03EA or ENC03JA
TYPE B : ENC03EB or ENC03JB
Replace the broken sensor with a same type sensor. If replace with other parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor
The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Adjustment page	F
Adjustment Address	43, 44

Note: The sensor sensitivity of SE451 and SE452 of the SE-65 board is written only on the repair parts.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Read the sensor sensitivity written on SE451 of the SE-65 board, and take this as S_{451}.
3) Read the sensor sensitivity written on SE452 of the SE-65 board, and take this as S_{452}.
4) Calculate D_{43}' and D_{44}' using the following equation (decimal calculation).
   $D_{43}' = 85 / S_{451}$
   $D_{44}' = 90 / S_{452}$
5) Convert D_{43}' and D_{44}' into hexadecimal digits, to obtain D_{43} and D_{44}. (Round off decimal points)
6) Select page: F, address: 43, set data: D_{43}, and press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 44, set data: D_{44}, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: 0, address: 01, and set data: 00.
2) Check that the steady shot operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN910 of the VC-195 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

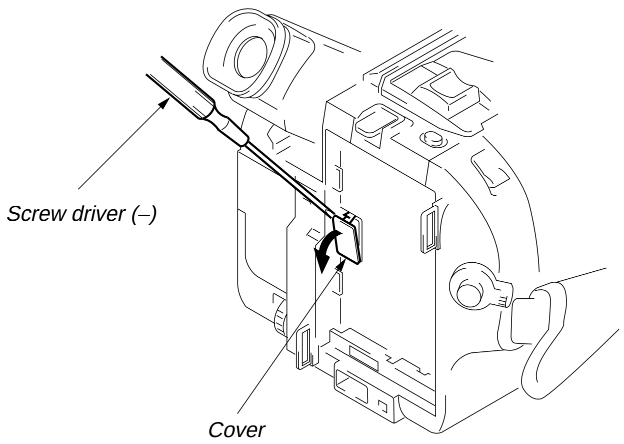


Fig.5-1-11.

1. EVF Initial Data Input

Mode	VTR stop
Signal	No signal
Adjustment Page	E
Adjusting Address	C2 to CD

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.

2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
C2	B0	VCO adjustment
C3	80	Bright adjustment
C4	77	Contrast adjustment
C5	80	White balance adjustment
C6	80	White balance adjustment
C7	68	Fixed value
C8	50	Fixed value
C9	F8	Fixed value
CA	A8	Fixed value
CB	3C	Fixed value
CC	B0	Backlight Consumption Current Adjustment
CD	70	Fixed value

2. VCO Adjustment (VF-119 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑱ of CN910 (VCO) on VC-195 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	E
Adjustment address	C2
Specified value	A = 1.8 ± 0.1Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Check the GND level of the oscilloscope.
5) Select page: E, address: C2, change the data and set the VCO output voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

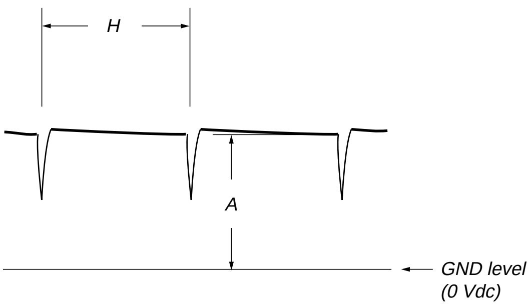


Fig. 5-1-12.

3. Bright Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑯ of CN910 (EVF VG) on VC-195 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	C3
Specified value	A = 7.2 ± 0.1 V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C3, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

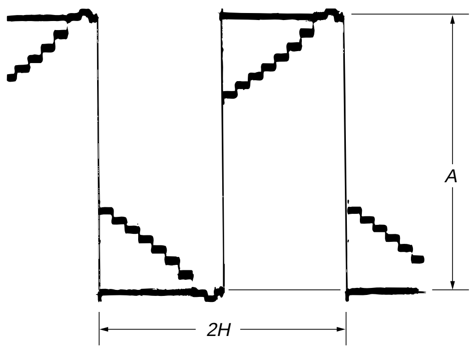


Fig. 5-1-13.

4. Contrast Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑯ of CN910 (EVF VG) on VC-195 board
Measuring Instrument	Oscilloscope
Adjustment Page	E
Adjustment Address	C4
Specified Value	A = 2.1 ± 0.1V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C4, change the data and set the voltage (A) between the 7 step peak and the pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

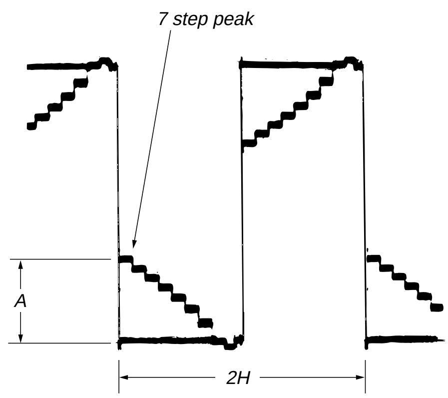


Fig. 5-1-14.

5. Backlight Consumption Current Adjustment (VF-120 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	VTR stop
Signal	No signal
Measurement Point	+ Probe: Pin ⑭ of CN910 (EVF BL 4.75V) on VC-195 board – Probe: Pin ⑬ of CN910 (EVF BL) on VC-195 board
Measuring Instrument	Digital voltmeter
Adjustment Page	E
Adjustment Address	CC
Specified Value	A = 21.0 ± 1.0 mVdc

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: CC, change the data and set the voltage difference (A) between Pin ⑭ of CN910 (EVF BL 4.75V) and Pin ⑬ of CN910 (EVF BL) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

6. White Balance Adjustment (VF-119 board)

Correct the white balance.
If deviated, the reproduction of the EVF screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	E
Adjustment Address	C5, C6
Specified Value	The EVF screen should not be colored.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 03.
4) Select page: E, address: C5 and C6, set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	C5	C6
Data	80	80

5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: C5 and C6 so that the EVF screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

6) Select page: 2, address: 7D, and set data: 00.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume- "8 mm Video Mechanism Adjustment Manual VII [B Mechanism]".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "Section 2 DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: F, address: 2A, and set data: 01, and press the PAUSE button of the adjusting remote commander.
7) Select page: D, address: 10, and set data: 10, and press the PAUSE button of the adjusting remote commander.
8) Disconnect the power supply of the unit.
   By carrying out the above procedure, the unit can be operated without loading a cassette.
   Be sure to carry out "Processing after Operations" after checking the operations.
   Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together.
   Forced VTR power supply ON mode 12
   Forced camera power supply ON mode 11

[Processing after Operations]

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: D, address: 10, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 2A, and set data: 04 and press the PAUSE button of the adjusting remote commander.
   (Be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1: Pin ⑥ of CN910 of VC-195 board
   External trigger: Pin ⑪ of CN910 of VC-195 board
   (Connect the oscilloscope via the CPC-7 jig (J-6082-382-A).)
7) Playback the alignment tape for tracking.
   WR5-1NP
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate "8 mm Video Mechanical Adjustment Manual VII (B Mechanism)".
9) Perform "Processing after operations", after completing adjustments.

CN910 of VC-195 board

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 2A, and set data: 00.
4) Press the PAUSE buttonA of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.
6) Remove the power supply from the unit.

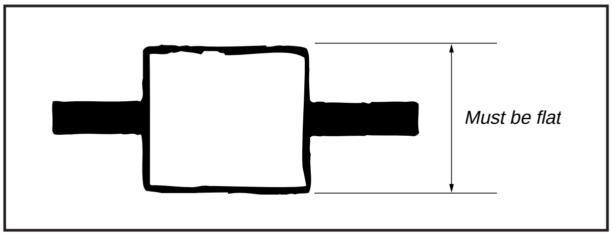


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-52.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For video frequency characteristics adjustment
      (WR5-7NE) Part Code: 8-967-995-13
    - For checking Standard 8 mode operations
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Note: The following alignment tapes can also be used.
      1) WR5-4NSP (8-967-995-41)
    - For checking Hi8 mode operations
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
    - For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For checking BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71
12) Remote commander for adjustment (J-6082-053-B)
13) CPC-7 jig Part Code: J-6082-382-A
14) Power code Part Code: J-6082-223-A
    Note: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side.
15) AFM DEV jig (J-6082-312-A)
16) IR Receiving jig (J-6082-383-A)
17) Extension cable (48P, 0.8mm) (J-6082-188-A)

3-1-2. Precautions on Adjusting

1) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to “VTR” (or “PLAYER”) or set the “Forced VTR Power ON mode” using the adjusting remote commander (Note 1).
   To set to the Camera mode, set the power switch to “CAMERA” or set the “Forced Camera Power ON mode” using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the “Forced VTR Power ON Mode” or “Forced Camera Power ON Mode”. (Note 3)
2) By setting the “Forced VTR Power ON mode” or “Forced Camera Power ON mode”, the video section can be operate even if even if the front panel block (MA-311 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
   1. VC-195 board CN903 (23P 0.5mm)
3) The lens block (CD-181 board) need not be connected except during battery end adjustment. To remove, disconnect the following connectors.
   1. VC-195 board CN501 (16P, 0.5mm)
   2. VC-195 board CN551 (23P, 0.5mm)
4) Video light (Video light model) need not be assembled. If removing it. disconnect the following connector.
   1. VC-195 board CN909 (10P, 0.5mm)
5) Cabinet (R) (Camera function switch (CF-49 board), viewfinder) need not be connected. But removing the cabinet (R) (removing the VC-195 board CN911) means removing the lithium 3V power supply (CF-49 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on history of use. (Refer to the “Service Mode” for the data on the history use.) To remove the cabinet (R), disconnect the following connectors.
   1. VC-195 board CN911 (50P, 0.5mm)

Note 1: Setting the “Forced VTR Power ON” mode (VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjusting remote commander.

The above procedure will enable the VTR power to be turned on with the front panel block removed.
After completing adjustments, be sure to exit the “Forced VTR Power ON mode”.

Note 2: Setting the “Forced Camera Power ON” mode (Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed.
   After completing adjustments, be sure to exit the “Forced Camera Power ON mode”.

Note 3: Exiting the “Forced Power ON” mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-195 board CN910. Connect the measuring instruments via the CPC-7 jig (J-6082-382-A). The following table lists the pin numbers and signal names of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-3-1.

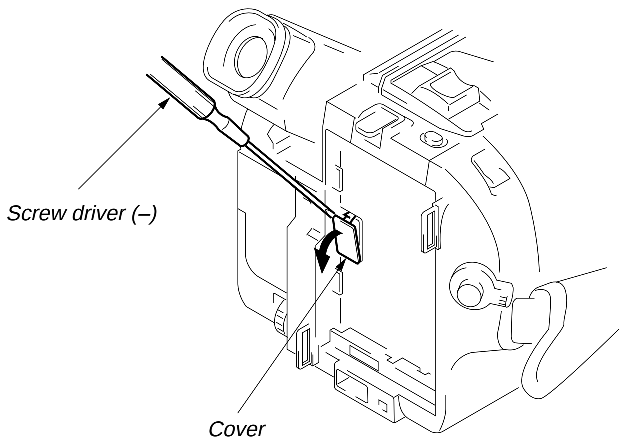


Fig. 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 5-3-2 and perform the adjustments.

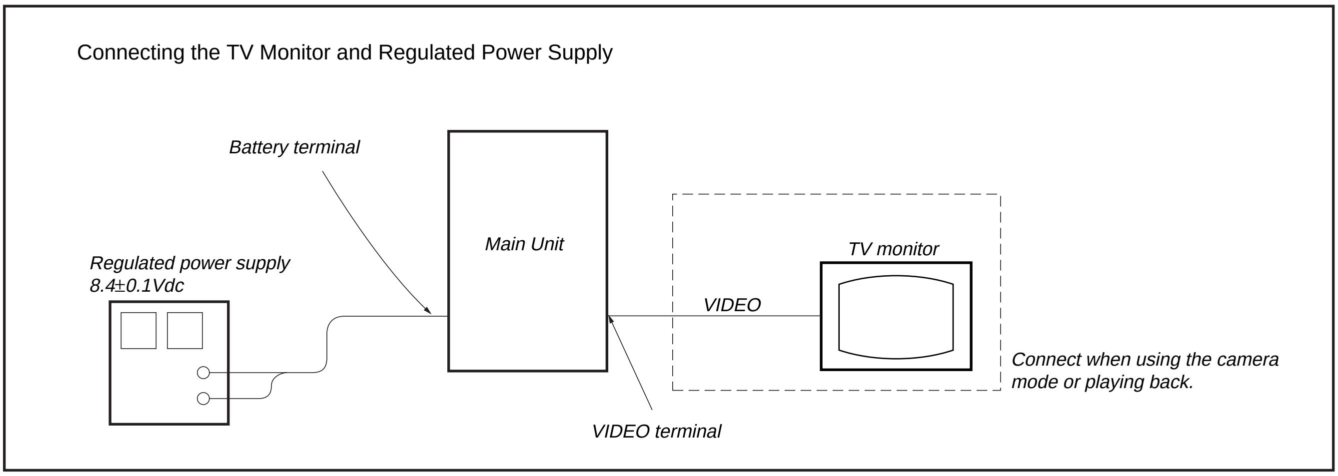


Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.
If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record -ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE	Hi8	ME	SP	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS	Standard 8 mm	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS	Standard 8 mm	MP	SP	BPF adjustment

Tape type
MP ..... Particle type metal tape
ME ..... Evaporated type metal tape

Table 5-3-2.

Fig. 5-3-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

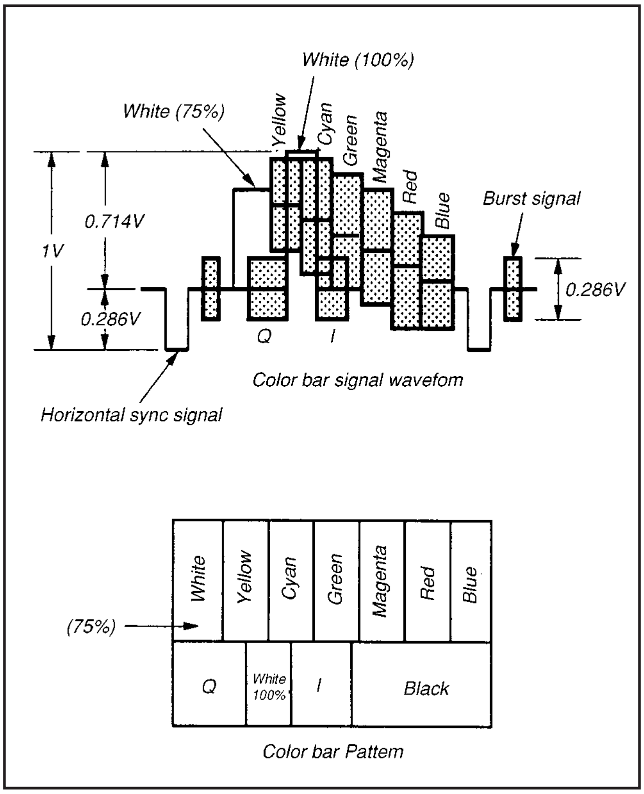


Fig. 5-3-3. Color Bar Signals of the Alignment Tape

3-1-6. Input/Output Level and Impedance

Video input/output
Phono jack, 1 Vp-p, 75Ω, unbalanced, sync negative

S video input/output (Hi8 model)
4-pin mini DIN
Luminance signal:
1Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal:
0.286Vp-p 75Ω, unbalanced

Audio input/output
Phono jack,
Input: –7.5 dBs, input impedance more than 47 kΩ
Output: –7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching (Hi8 model)

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automaticaly according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-8. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Select page: 0, address: 01, and set data: 01 before setting the data of page D and F.

Page F	Address 2A

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.
The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency.
Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.

Note 2: When rewriting the data, be sure to press the PAUSE buttton of the remote commander after setting the data.

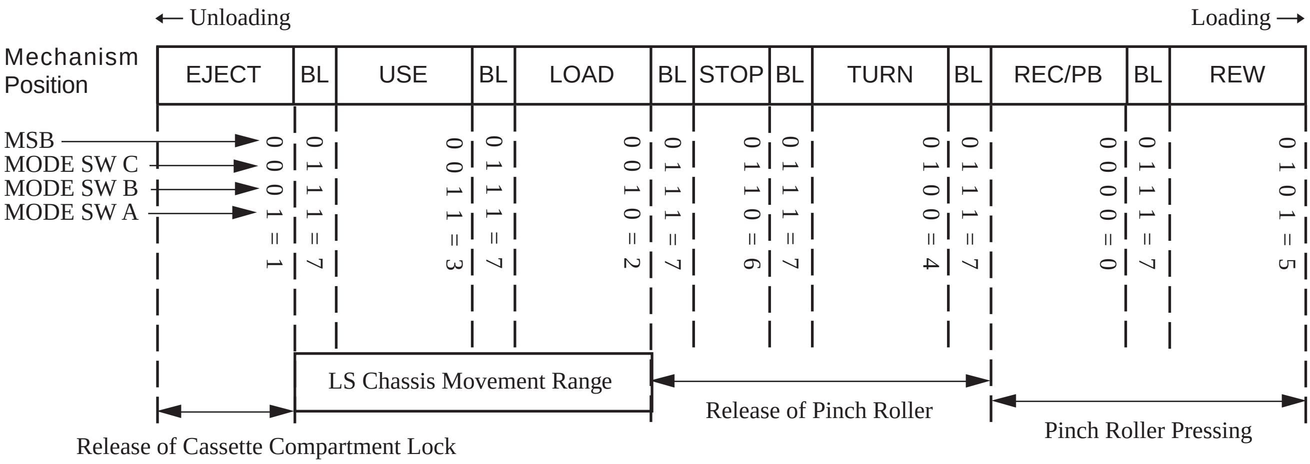
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

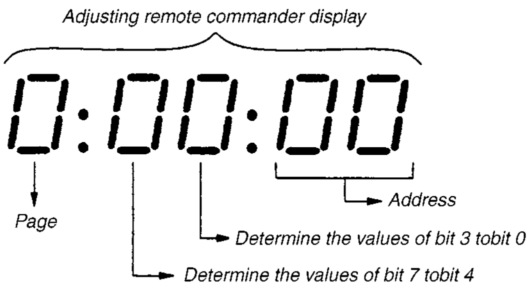
- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.



Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is “1” or “0”.



	Remote controller display	Bit value bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) If the remote commander display data is “8E”, bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. Switch check (1)

Page 3	Address 43

Bit	Function	When bit value=1	When bit value=0
0	VTR MODE SW	OFF	ON
1	CAM MODE SW	OFF	ON
2	START/STOP SW	OFF	ON
3	EJECT SW	OFF	ON
4	CC DOWN SW	OFF	ON
5			
6			
7			

Using method:

1) Select page: 3, address: 43.
2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch check (2)

Page 3	Address 60 to 65

Using method:
1) Select page: 3, address: 60 to 65.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0D	0E to 29	2A to 46	47 to 68	69 to 90	91 to BE	BF to EA	EB to FF
60 (AD0: IC604 ⑨③)	LASER LINK (FK-8500 S008)	STOP (FK-8500 S001)	FF (FK-8500 S003)	REC (FK-8500 S005, 007)	EDIT SEARCH (+) (FK8500 S009)	EDIT SEARCH (–) (FK8500 S010)		No key input
61 (AD1: IC604 ⑨④)		PAUSE (FK-8500 S002)	REW (FK-8500 S004)	PLAY (FK-8500 S006)				No key input
62 (AD2: IC604 ⑨⑤)		PICTURE EFFECT (CF-49 S006)	MENU (CF-49 S010)	EXECUTE (CF-49 S015)	TIME (CF-49 S021)	5sec REC (CF-49 S024)	PUSHING REC (CF-49 S024)	NORMAL REC (CF-49 S024)
63 (AD3: IC604 ⑨⑥)	PROGRAM AE SPOT LIGHT (CF-49 S020)	PROGRAM AE PORTRAIT (CF-49 S020)	PROGRAM AE SPORTS LESSON (CF-49 S020)	PROGRAM AE BEACH & SKI (CF-49 S020)	PROGRAM AE SUNSET & MOON (CF-49 S020)	PROGRAM AE LANDSCAPE (CF-49 S020)		PROGRAM AE AUTO (CF-49 S020)
64 (AD4: IC604 ⑨⑦)			EXPOSURE (CF-49 S012)	BACK LIGHT (CF-49 S017)	FADER (MF-8500 S002)	FOCUS INFINITY (MF-8500 S001)	FOCUS AUTO (MF-8500 S001)	FOCUS MANUAL (MF-8500 S001)
65 (AD5: IC604 ⑨⑧)	DATE (CF-49 S003)	COUNTER RESET (CF-49 S008)		TITLE (CF-49 S018)				No key input

6. Headphone jack check

Page 3	Address 45

Bit	Function	When bit value=1	When bit value=0
1	Headphone jack	Headphone jack is used	

Using method:
1) Select page: 3, address: 45.
2) By discriminating the bit value of display data, the state of the headphone jack can be discriminated.

7. Input/output selection check

Page 3	Address 49

Bit	Function	When bit value=1	When bit value=0
1			
2			
3			
4	MIC jack		MIC jack is used
5	AUDIO terminal	Monaural	Stereo
6	VIDEO terminal	VIDEO terminal is used	
7	S VIDEO terminal		S VIDEO terminal is used

Using method:
1) Select page: 3, address: 49.
2) By discriminating the bit value of display data, the state of the input/output selection can be discriminated.

8. LED, LCD (display window) check

Page 3	Address 05	Bit5

Using method:
1) Select page: 3, address: 05, and set the bit value of Bit5 to "1".
2) Check that all LED are lit and all segments of LCD (display window) are lit.
3) Select page: 3, address: 05, and set the bit value of Bit5 to "0".

9. Record of Use Check

Page 3	Address A2 to AA

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	

Using method:
1) The record of use data is displayed at page: 3, addresses: A2 to AA.

Note: This data will be erased when the coin lithium battery is removed (reset).

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform “1-2. INITIALIZATION OF D, E, F PAGE DATA”, of “5-1. CAMERA SECTION ADJUSTMENT”.

2. Battery End Adjustment (VC-195 board)

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera recording
Subject	Arbitrary
Measurement Point Measuring Instrument	LCD display of the adjusting remote commander
Adjustment Page	D
Specified value	30 to 34

Note 1: The lens block and cabinet (R) must be connected.

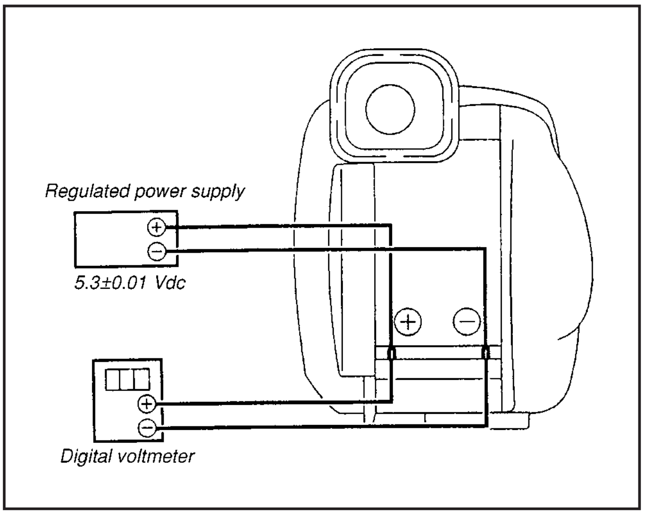


Fig. 5-3-4.

Switch setting
1) AUTO FOCUS .... OFF
2) NIGHT SHOT .... OFF
   (NIGHT SHOT model)
3) VIDEO LIGHT .... OFF
   (VIDEO LIGHT model)

Connection:
1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-4.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1±0.1Vdc.
2) Turn off the power supply.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Turn on the power supply.
5) Load a cassette, and set to the camera recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.30±0.01Vdc.
8) Select page: 3, address: 5D, read the data, and this data is named Dref.
9) Select page: D, address: 30, set data: Dref, and then press the PAUSE button of the adjusting remote commander.
10) Convert Dref to decimal notation, and obtain Dref '. (Refer to Table 5-1-2. “Hexadecimal-decimal conversion table”)
11) Calculate D_{31}', D_{32}', D_{33}' and D_{34}' using following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
    Address: 31 D_{31}' = Dref ' + 5
    Address: 32 D_{32}' = Dref ' + 32
    Address: 33 D_{33}' = Dref ' + 53
    Address: 34 D_{34}' = Dref ' + 64

Note 3: After setting each data, be sure to press the PAUSE button.

12) Select page: 0, address: 01, and set data: 00.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-195 board)

Improve the capstan servo characteristic. If it is not correct. jitters will increase.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	Pin ⑫ of CN910 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	69
Specified value	Duty = 50±1%

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, and set data: 81, and press the PAUSE button of the adjustment remote commander. (to start up automatic CAP FG offset adjustment.)
3) Select page: 2, address: 02, and check that the data is "01".
4) Check that Duty of CAP FG signal satisfies the specified value. If not, select page: 2, address: 01, set data: 00, and press the PAUSE button, and then, repeat steps 2) to 4).
5) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjustment remote commander.
6) Select page: 0, address: 01, and set data: 00.

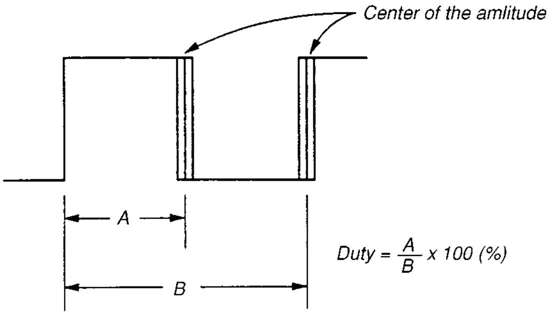


Fig. 5-3-5.

2. Switching Position Adjustment (VC-195 Board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7C, 7D
Specified Value	t1 = 0±10μsec

Adjusting Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 20, and press the PAUSE button of the adjustment remote commander.
3) Select page: F, address: 7C, change the data and minimize "t1", and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
4) Select page: F, address: 7D, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjustment remote commander.
6) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjustment remote commander.
7) Select page: 0, address: 01, and set data: 00.

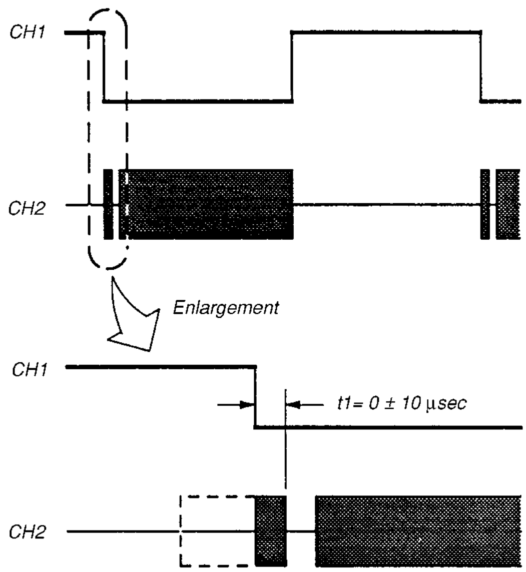


Fig. 5-3-6.

3. NTSC LP mode Switching Position Adjustment (VC-195 Board) (CCD-TR917/ TR940/ TR940PK)

If deviated in this case causes switching noise or jitter on the LP mode played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC))
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7E, 7F
Specified Value	t1 = 0±10μsec

Adjusting Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, set data: 60, and then press the PAUSE button of the adjustment remote commander.
3) Select page: F, address: 7E, change the data and minimize “t1”, and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
4) Select page: F, address: 7F, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Select page: F, address: 2A, set data: 00, and then press the PAUSE button of the adjustment remote commander.
6) Press the PAUSE button of the adjustment remote commander.
7) Select page: 0, address: 01, and set data: 00.

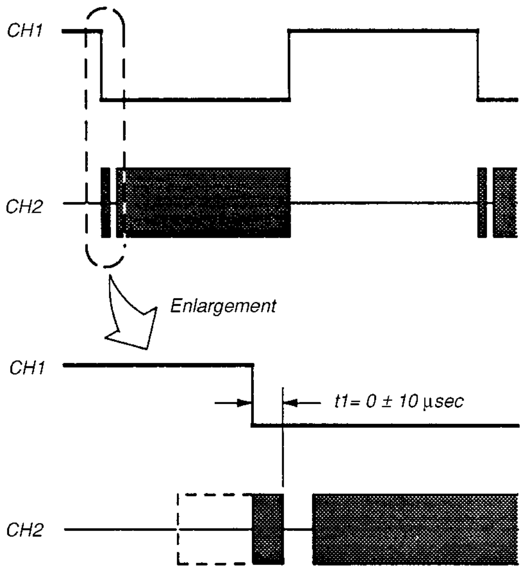


Fig. 5-3-7.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28MHz origin oscillation adjustment
2. AFC f0 adjustment
3. Filter f0 adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. RP filter f0 adjustment
7. Hi8 REC Y current adjustment
8. Standard REC Y current adjustment
9. Hi8 REC L level adjustment
10. Standard8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-195 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin (66) of IC202 or pin ⑫ of IC501
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	2C
Specified Value	Pin (66) of IC202 : f=3579545±17Hz Pin ⑫ of IC501 : f=14318181±68Hz

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30.
4) Select page: F, address: 2C, change the data and set the clock frequency(f) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. AFC f0 Adjustment (VC-195 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN910 (AGC f0)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	4A
Specified Value	A = 2.10±0.05Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4A, change the data and set the DC voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

3. Filter f0 Adjustment (VC-195 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN910 (IR VIDEO)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4D
Specified Value	Minimum residual chroma signal components (A = Bellow 12mV)

Switch setting:

LASER LINK .... ON (Red LED is lit)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4F, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4D, change the data and minimize the residual chroma signal components (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

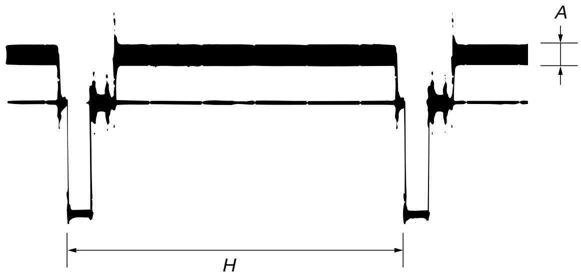


Fig. 5-3-8.

4. Y OUT Level Adjustment (VC-195 board)

Set the Y signal output level.

Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model : Y signal terminal of S VIDEO terminal (75Ω terminated) Standard 8 model : VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	49
Specified Value	A = 286±5mV

Note 1: Insert the plug into the S video terminal (Hi8 model)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30.
4) Select page: F, address: 49, change the data and set the SYNC level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

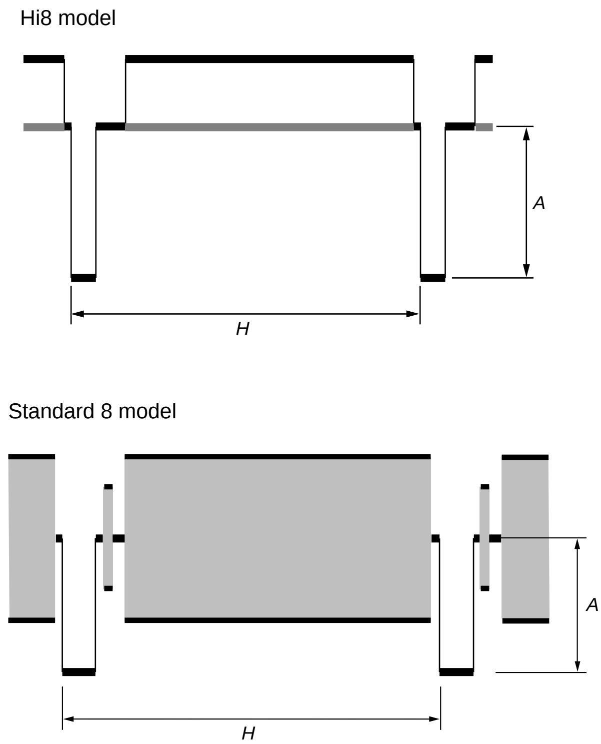


Fig. 5-3-9.

5. C OUT Level Adjustment (VC-195 board)

Set the chroma signal output level.

Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model : Chroma signal terminal of S VIDEO terminal (75Ω terminated) Standard 8 model : VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4B
Specified Value	A = 286±5mV

Note 1: Insert the plug into the S video terminal (Hi8 model)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30.
4) Select page: F, address: 4B, change the data and set the burst level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

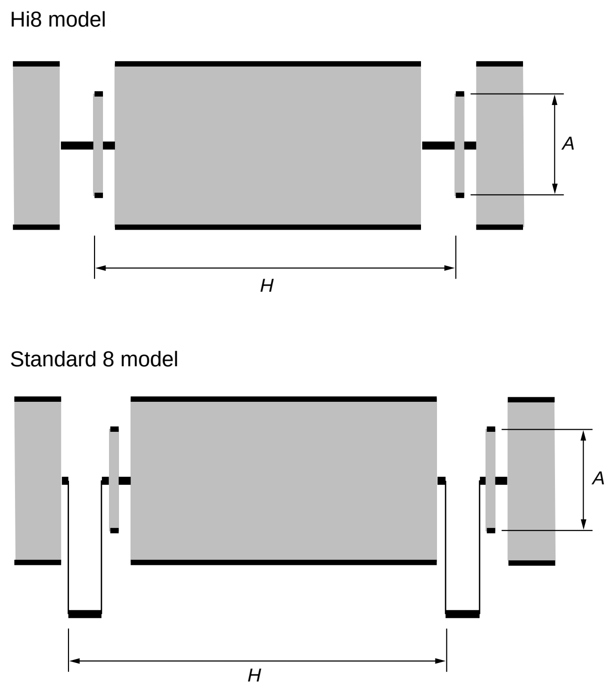


Fig. 5-3-10.

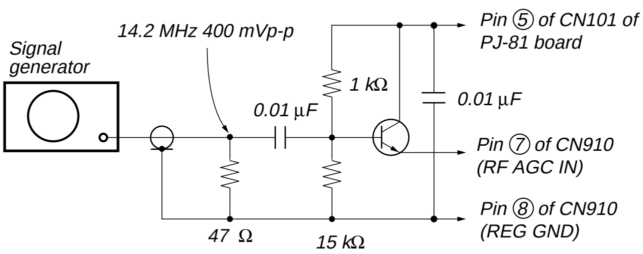
6. RP Filter f0 Adjustment (VC-195 board)

Adjust the LPF of the playback RF amplifier.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑨ of CN910 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4E
Specified Value	A = Below 10mVp-p

Connection:

1) Input a 14.2MHz, 400mVp-p CW signal to Pin ⑦ of CN910 (RF AGC IN).



Transistor : General NPN transistor (2SC403. etc)
47 Ω resistor : 1-249-401-11
1 kΩ resistor : 1-249-417-11
15 kΩ resistor : 1-249-431-11
0.01 µF capacitor : 1-101-004-00

Fig. 5-3-11.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 35, and press the PAUSE button of the adjusting remote commander.
3) Only for Standard8 model, select page: D, address: 15, after memorizing the data , set the bit value of bit0 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service Mode".).
4) Select page: F, address: 4E, change the data and minimize the 14.2 MHz signal level (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: D, address: 15, and set the data memorized at step 3), and press the PAUSE button of the adjusting remote commander..
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

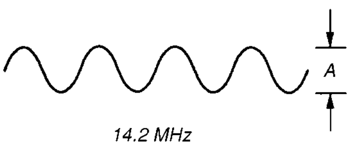


Fig. 5-3-12.

7. Hi8 REC Y Current Adjustment (VC-195 board) (CCD-TR917/TR940/TR940PK)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 160±5mV

Adjusting method:

1) Insert a tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
6) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 54, and read the data (D_{54}).
9) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

    Address: 53 $D_{53} = D_{54}$
    Address: 55 $D_{55} = D_{54} + 10$
    Address: 56 $D_{56} = D_{54} + 10$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	A0
58	80
59	90
5A	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

11) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
13) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
14) Select page: 0, address: 01, and set data: 00.

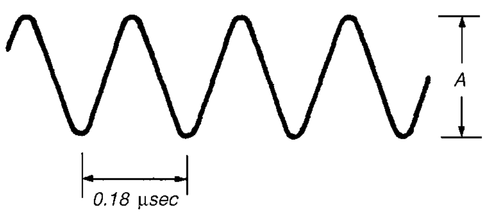


Fig. 5-3-13.

8. Standard8 REC Y Current Adjustment (VC-195 board) (CCD-TR57/ TR67/ TR87/ TR413PK/ TR414PK)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 170±5mV

Preparations only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service Mode".)
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
5) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method:

1) Insert a tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
6) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 54, and read the data (D_{54}).
9) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

    Address: 53 $D_{53} = D_{54}$
    Address: 55 $D_{55} = D_{54}$
    Address: 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	80
58	80
59	80
5A	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

11) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
13) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
14) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch".
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch".
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

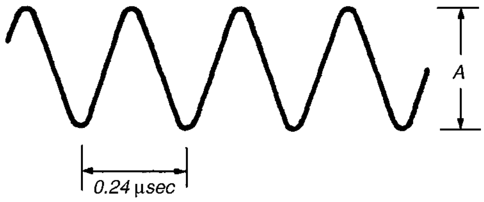


Fig. 5-3-14.

9. Hi8 REC L Level Adjustment (VC-195 board) (CCD-TR917/TR940/TR940PK)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 10.1±0.6mV

Note 1: Do not insert a plug into the AUDIO (R) terminal.

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Adjusting method:
1) Insert Hi8 ME tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 5C, read the data (D_{5C}).
8) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
   - Address: 5B $D_{5B} = D_{5C}$
   - Address: 5D $D_{5D} = D_{5C} - 0C$
   - Address: 5E $D_{5E} = D_{5C} - 0C$
   - Address: 5F $D_{5F} = D_{5C} + 12$
   - Address: 60 $D_{60} = D_{5C} + 12$
   - Address: 61 $D_{61} = D_{5C} + 13$
   - Address: 62 $D_{62} = D_{5C} + 13$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

9) Write the following data in page: F, address: 63 to 64.

Address	Data
63	7C
64	78

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Select page: 0, address: 01, and set data: 00.
11) Perform “REC C Current Adjustment”.

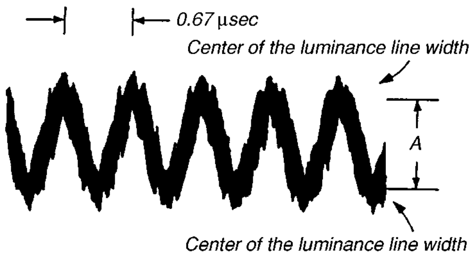


Fig. 5-3-15.

10. Standard8 REC L Level Adjustment (VC-195 board) (CCD-TR57/ TR67/TR87/TR413PK/ TR414PK)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 9.6±0.6mV

Note 1: Do not insert a plug into the AUDIO (R) terminal.

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Preparations only for the model without REC switch:
1) Insert Srandrd8 MP tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service Mode").
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
5) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method:
1) Insert Srandrd8 MP tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 5C, read the data (D_{5C}).
8) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

Address: 5B $D_{5B} = D_{5C}$
Address: 5D $D_{5D} = D_{5C}$
Address: 5E $D_{5E} = D_{5C}$
Address: 5F $D_{5F} = D_{5C}$
Address: 60 $D_{60} = D_{5C}$
Address: 61 $D_{61} = D_{5C}$
Address: 62 $D_{62} = D_{5C}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

9) Write the following data in page: F, address: 63 to 64.

Address	Data
63	80
64	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Select page: 0, address: 01, and set data: 00.
11) Perform "REC C Current Adjustment".

Processing after completed adjustment: only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch".
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch".
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

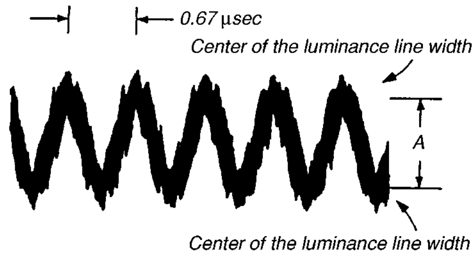


Fig. 5-3-16.

11. REC C Current Adjustment (VC-195 board)

Set the recording current levels of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	65
Specified Value	Hi8 model : A = 34.6±1.2mV Standard8 model : A = 30.9±1.1mV

Note 1: HI8 model: CCD-TR917/ TR940/ TR940PK
Standard8 model: CCD-TR57/ TR67/ TR87/ TR413PK/ TR414PK

Connection:
1) Remove C085 (0.01μF, Pin ⑯ of IC202).

Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).

2) Connect Pin ① of IC001 and GND with a 0.01F capacitor.
   0.01μF capacitor: 1-101-004-00

Preparations only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service Mode").
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
5) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method:
1) Insert a tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 61, and set data: 30.
5) Select page: F, address: 65, change the data and set the REC chroma signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 61, and set data: 10.
8) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch".
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch".
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

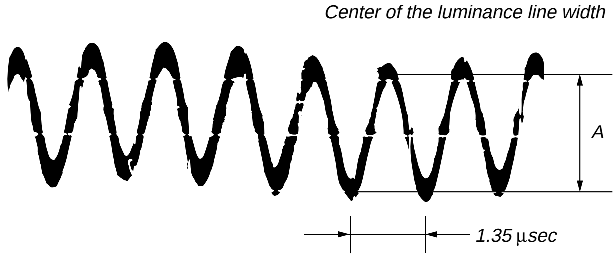


Fig. 5-3-17.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TR87/ TR414PK/ TR917/ TR940/ TR940PK)

Adjust using a IR receiver jig (J-6082-383-A).

Switch setting:
LASER LINK .... (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (VC-195 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑯ of IC751 of VC-195 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	68
Specified Value	f = 11.85±0.05MHz

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

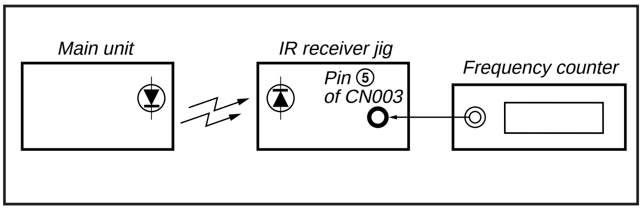


Fig. 5-3-18.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 37, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 68, change the data, and set the video carrier frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. IR Video Deviation Adjustment (VC-195 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	A = 0.87±0.04V

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

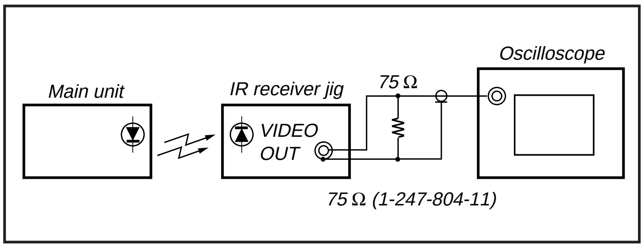


Fig. 5-3-19.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 39, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 66, and change the data, set the video signal amplitude (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

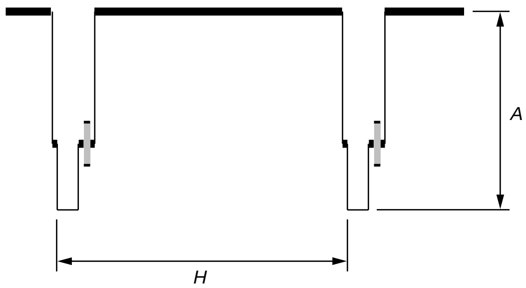


Fig. 5-3-20.

3. IR Audio Deviation Adjustment (VC-195 board)

Mode	VTR recording
Signal	Audio signal : 400Hz, –7.5dBs : L or R of AUDIO terminal Video signal : Color bar signal : VIDEO terminal
Measurement Point	AUDIO L terminal and AUDIO R terminal of IR receiver jig (Terminated at 47kΩ)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	67
Specified Value	Signal level: –7.5±2.0dBs

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

Preparations only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service Mode").
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
5) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Connect the audio level meter to the AUDIO L terminal of the IR receiver jig.
3) Select page: F, address: 67, change the data and set the 400Hz audio signal level to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Connect the audio level meter to the AUDIO R terminal of the IR receiver jig.
6) Check that the 400Hz audio signal level is within the specified value. If outside, repeat from step 2).
7) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch".
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch".
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

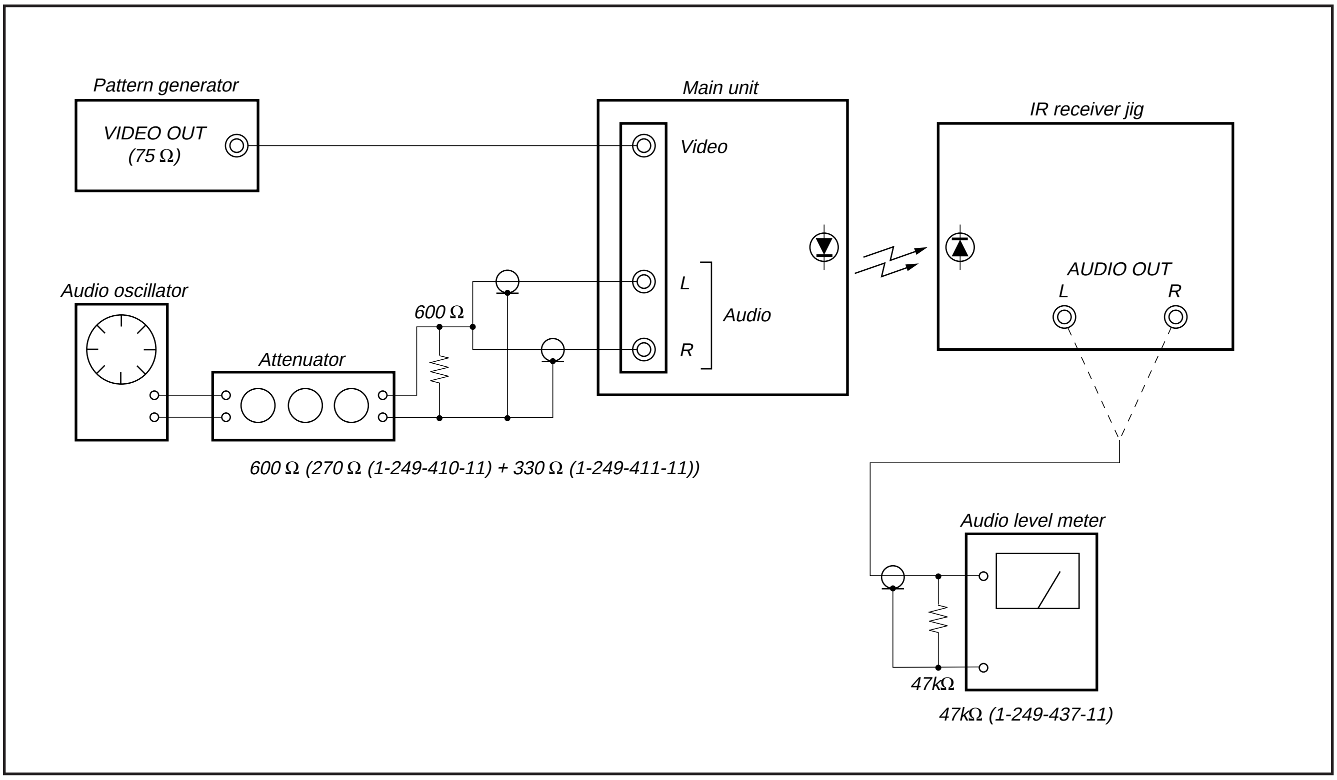


Fig. 5-3-21.

3-6. STEREO AUDIO SYSTEM ADJUSTMENT (CCD-TR917/ TR940/ TR940PK)

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to “STEREO” position unless specified otherwise.

Note:

1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.
2) Be sure to insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode well be set, and correct adjustments can not be carried out.
   [Monaural mode]
   During recording .... REC AFM RF 1.7MHz carriear will not be output.
   During playback .... The L+R signal will be output from the AUDIO terminal (Left).

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-22, and perform adjustments at the power switch [VTR] or [PLAYER] position.

[Adjustment Procedure]

1) 1.5 MHz deviation adjustment
2) 1.7 MHz deviation adjustment
3) BPF adjustment

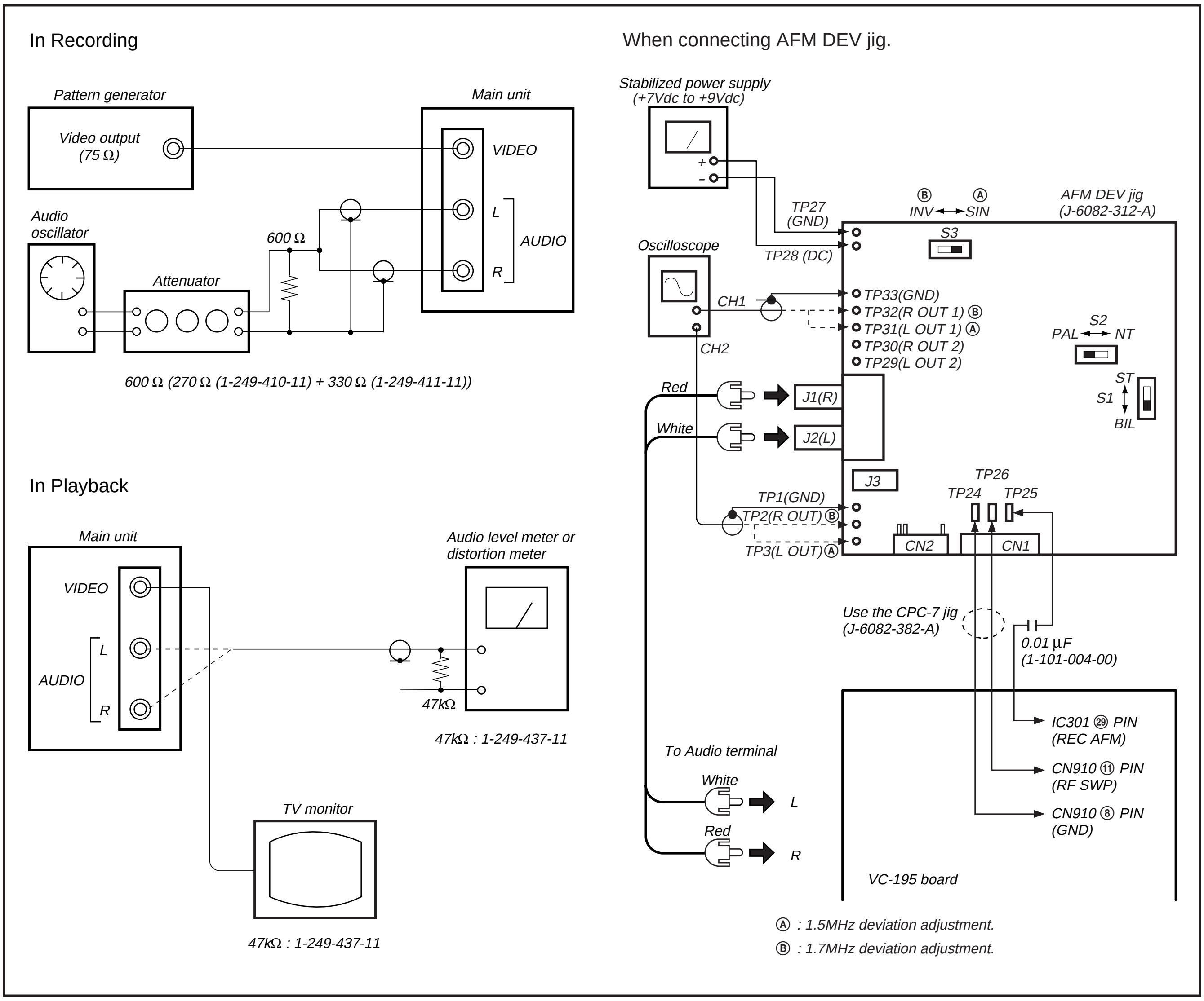


Fig. 5-3-22.

1. 1.5 MHz Deviation Adjustment (VC-195 board)

Sets the spectrum of the L-ch ((L+R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring Instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment Page	F
Adjustment Address	45
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect TP24 and TP26 of the AFM DEV jig to CN910 of the VC-195 board.
   TP24(GND) .... Pin ⑧ of CN910
   TP26(RF SWP) .... Pin ⑪ of CN910
2) Connect TP25 (REC AFM) of the AFM DEV jig to Pin ㉙ of IC301 with a 0.01µF capacitor (1-101-004-00).
3) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
4) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
5) Set the AFM DEV jig switches to the following positions.
   S1 .... BIL Position
   S2 .... NT Position
   S3 .... SIN Position

Adjusting method :

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (invert) mode.
3) Select page: 0, address: 01, and set data: 01.
4) Select page: F, address: 45, change the data and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

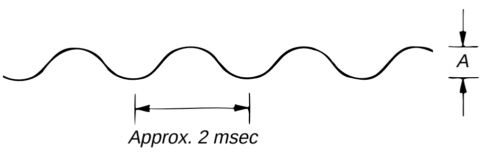


Fig. 5-3-23.

2. 1.7 MHz Deviation Adjustment (VC-195 board)

Sets the spectrum of the R-ch ((L-R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring Instrument	Oscilloscope ADD mode CH2 normal mode
Adjustment Page	F
Adjustment Address	46
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect TP24 and TP26 of the AFM DEV jig to CN910 of the VC-195 board.
   TP24 (GND) .... Pin ⑧ of CN910
   TP26 (RF SWP) .... Pin ⑪ of CN910
2) Connect TP25 (REC AFM) of the AFM DEV jig to Pin ㉙ of IC301 with a 0.01µF capacitor (1-101-004-00).
3) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
4) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
5) Set the AFM DEV jig switches to the following positions.
   S1 .... BIL Position
   S2 .... NT Position
   S3 .... INV Position

Adjusting method :

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the normal mode.
3) Select page: 0, address: 01, and set data: 01.
4) Select page: F, address: 46, change the data and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

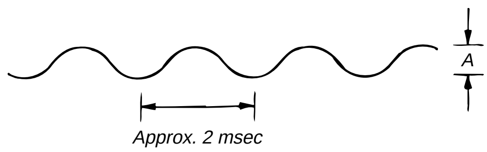


Fig. 5-3-24.

3. BPF f0 Adjustment (VC-195 board)

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11NS)
Measurement Point	Audio output terminal left or right
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The Main and Sub channel distortion rate should be almost the same (within±1%) and minimum.

Adjusting method :

1) Select page: 0, address: 01, and set data: 01.
2) Set the Hi-Fi sound switch (menu display) to “2”.
3) Select page: F, address: 47, change the data and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch (menu display) to “1”.
6) Select page: F, address: 47, change the data and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address: 47 so that the distortions rates when the Hi-Fi sound switch is set to “2” and set to “1” respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.
11) Select page: 0, address: 01, and set data: 00.
12) Set the Hi-Fi sound switch to “STEREO”.

3-7. MONAURAL AUDIO SYSTEM ADJUSTMENT MONAURAL (CCD-TR57/TR67/TR87/TR413PK/ TR414PK)

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown Fig. 5-3-25.

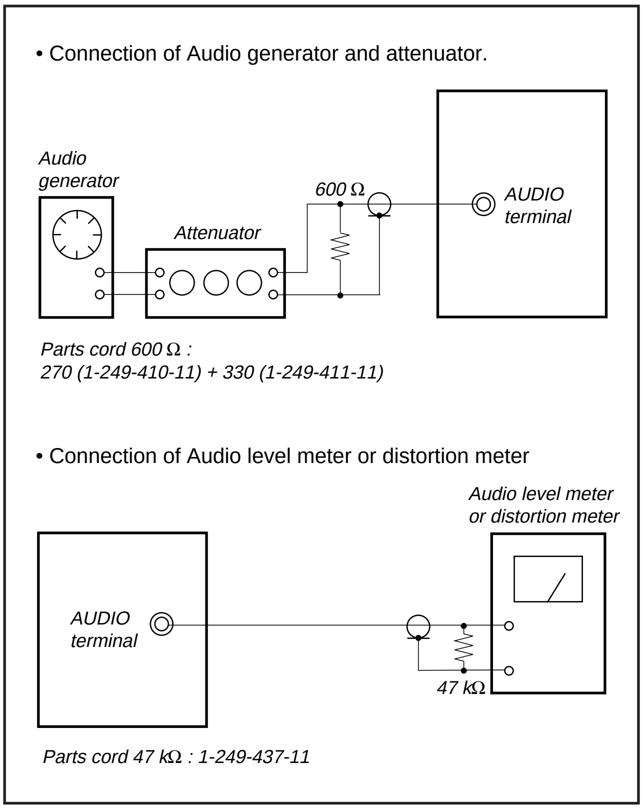


Fig. 5-3-25.

1. 1.5 MHz Deviation Adjustment (VC-195 board)

Adjust to the optimum audio FM signal distortion.
If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5NSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	45
Specified Value	–7.5±0.5dBs

Adjusting method :

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 45, change the data and set the 400Hz signal level to the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

2. BPF Adjustment (VC-195 board)

Adjust to the optimum audio BPF characteristics of the IC.
If the adjustment is not correct, the distortion rate and S/N ratio will worsen.

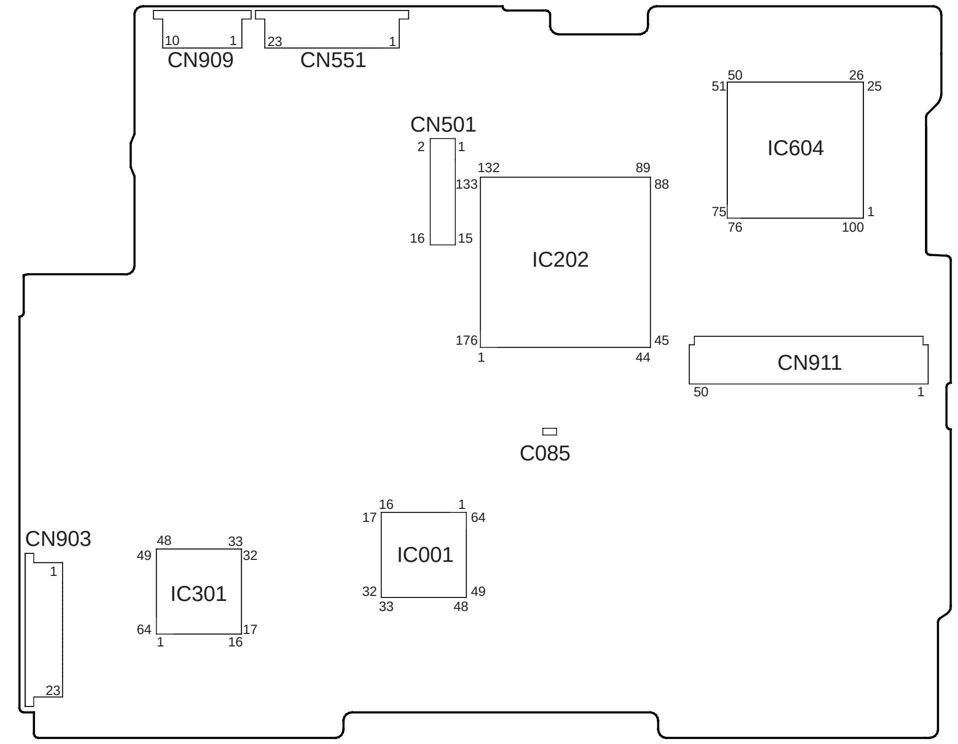
Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11NS)
Measurement Point	Audio output terminal
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The distortion rate should be and minimum.

Adjusting method :

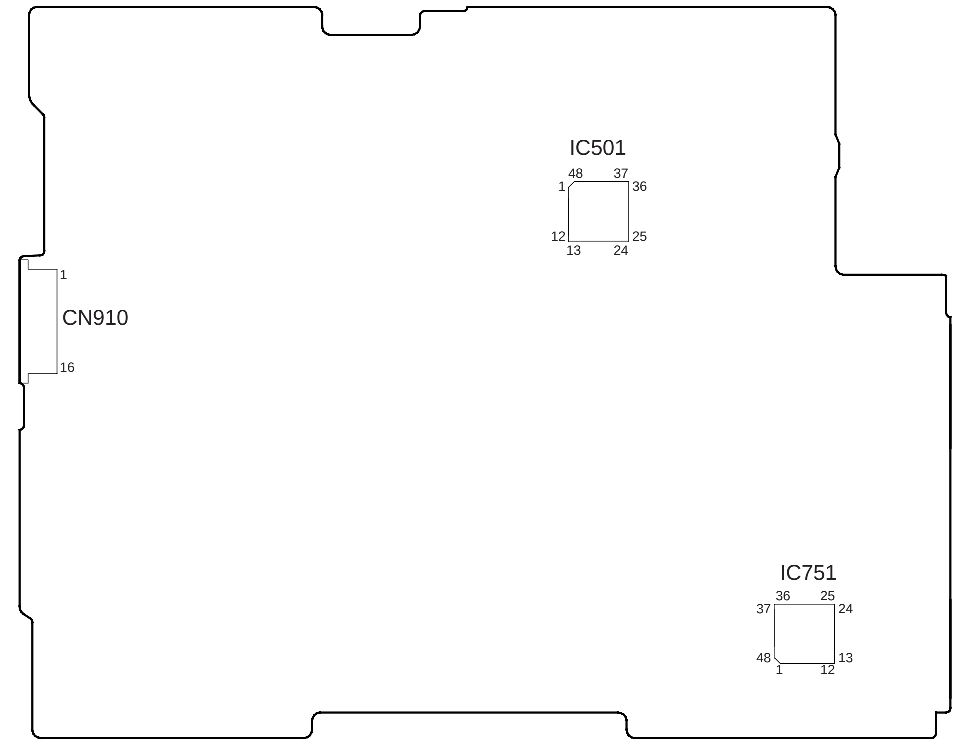
1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 47, change the data and minimize the distortion rate.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

3-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VC-195 BOARD (SIDE A)



VC-195 BOARD (SIDE B)



SECTION 6
REPAIR PARTS LIST

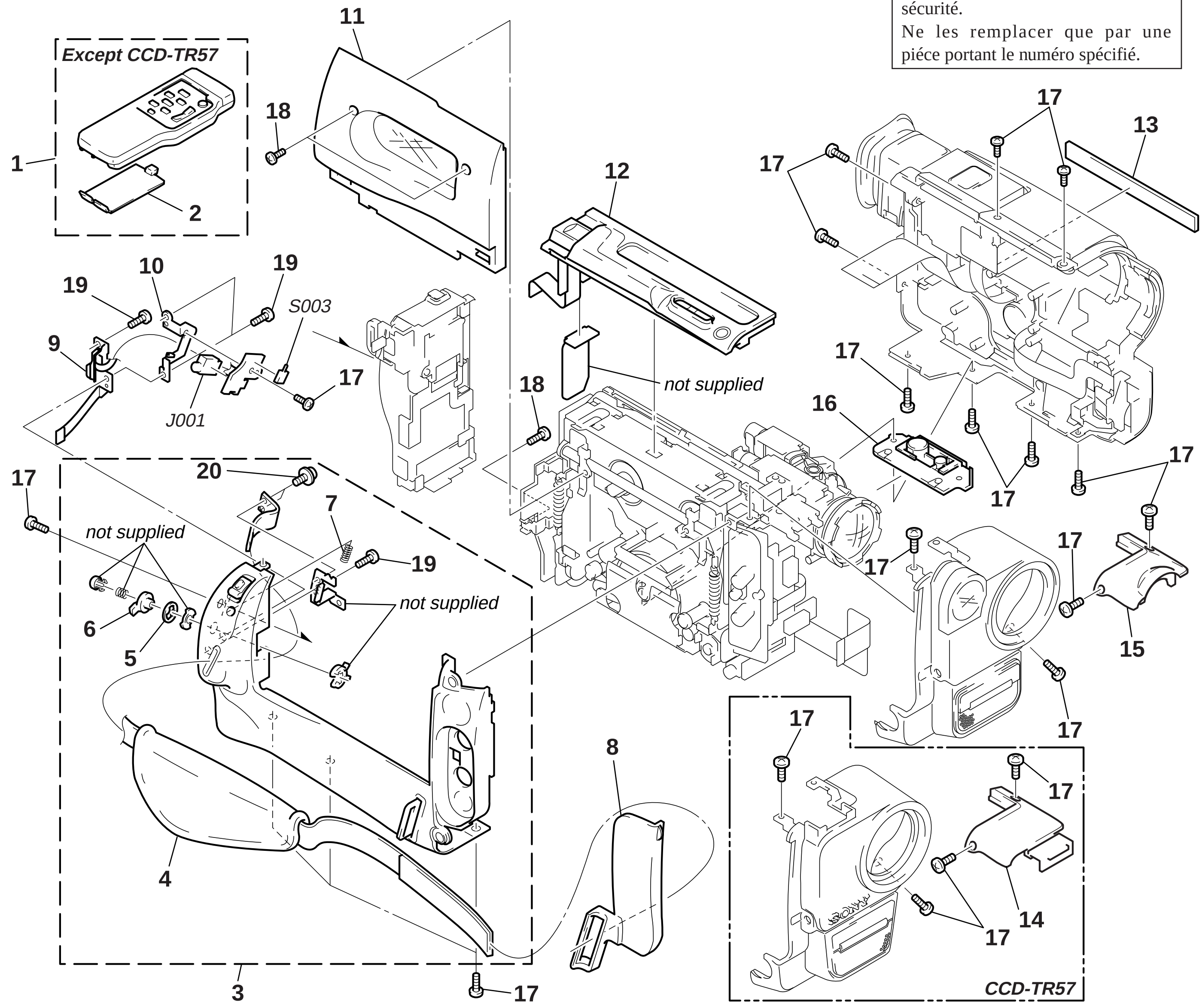
6-1. EXPLODED VIEWS

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

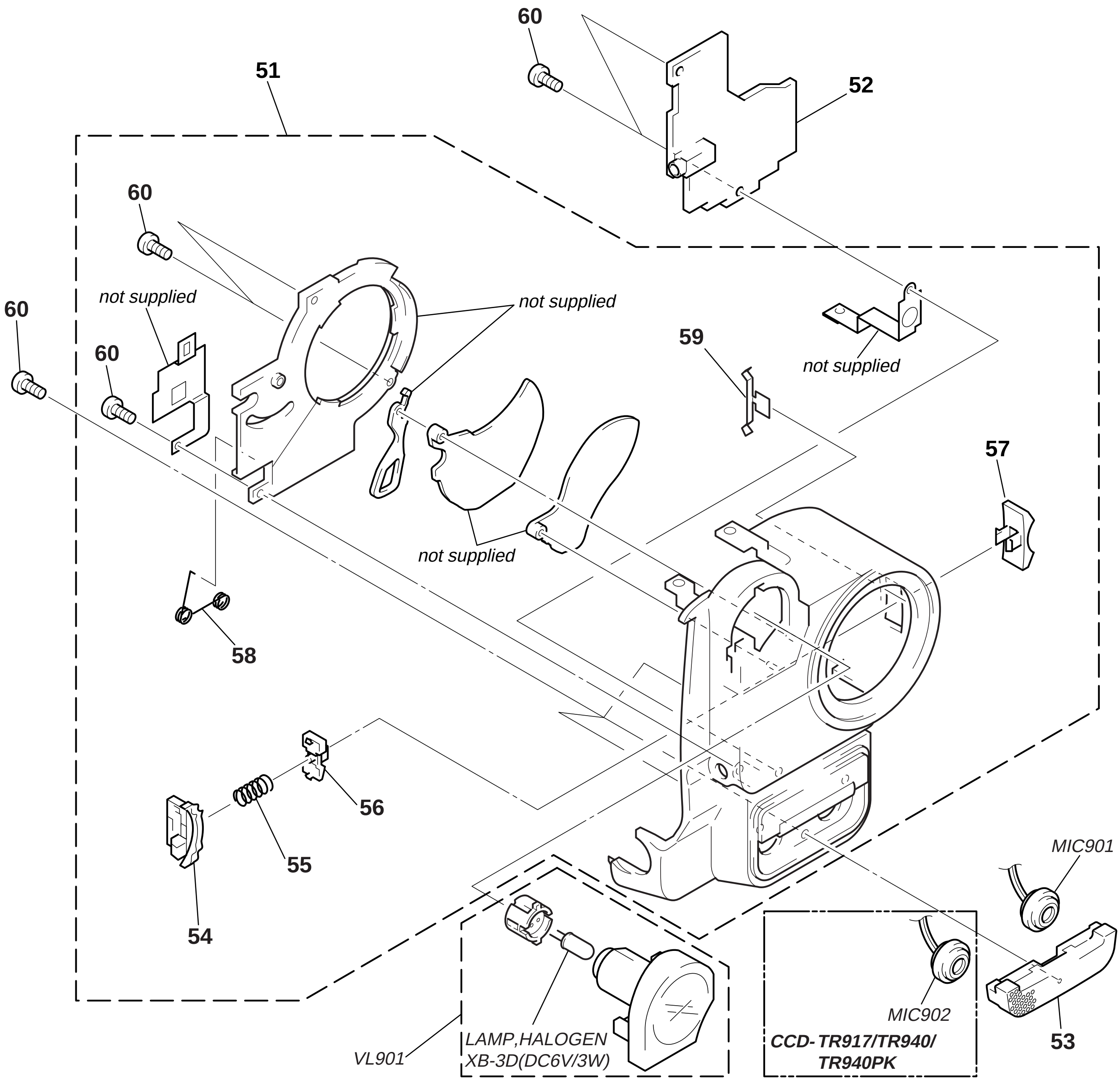
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

6-1-1. CABINET (L) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	1-467-574-21	REMOTE COMMANDER (RMT-708) (EXCEPT TR57)	
2	3-958-131-01	LID, BATTERY CASE (FOR RMT-708) (EXCEPT TR57)	
3	X-3948-205-1	CABINET (L) ASSY (TR917/TR940/TR940PK)	
3	X-3948-208-1	CABINET (L) ASSY (TR57/TR67/TR87/TR413PK/TR414PK)	
4	3-969-339-31	BELT, GRIP	
5	3-970-854-01	SPRING, STAND-BY	
6	3-969-081-01	KNOB, STAND-BY	
7	3-302-492-00	SPRING, COMPRESSION	
8	3-975-522-01	COVER, JACK	
9	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
* 10	3-975-532-01	HOLDER, EL	
11	X-3948-219-1	LID ASSY, CASSETTE (TR917/TR940)	
11	X-3948-221-1	LID ASSY, CASSETTE (TR57/TR67/TR87)	
11	X-3948-222-1	LID ASSY, CASSETTE (TR940PK)	
11	X-3948-223-1	LID ASSY, CASSETTE (TR413PK/TR414PK)	
12	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500) (TR57/TR67/TR413PK)	
12	1-475-617-21	SWITCH BLOCK, CONTROL (FK-8500) (TR87/TR414PK)	
12	1-475-617-71	SWITCH BLOCK, CONTROL (FK-8500) (TR917/TR940/TR940PK)	
13	3-987-748-11	PLATE (860), ORNAMENTAL (TR940/TR940PK)	
13	3-987-748-31	PLATE (860), ORNAMENTAL (TR413PK/TR414PK)	
13	3-987-748-91	PLATE (860), ORNAMENTAL (TR917)	
13	3-987-749-51	PLATE (860), ORNAMENTAL (TR67)	
13	3-987-749-61	PLATE (860), ORNAMENTAL (TR87)	
13	3-987-749-81	PLATE (860), ORNAMENTAL (TR57)	
14	3-987-645-01	CABINET (N) (TR57)	
15	3-987-652-01	CABINET (LT) (ECXEPT TR57)	
16	3-987-717-01	SCREW, TRIPOD	
17	3-962-826-01	SCREW (2X4)	
18	3-713-786-21	SCREW (M2X3)	
19	3-948-339-61	TAPPING	
20	3-679-362-11	SCREW	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
S003	1-572-688-11	SWITCH, PUSH (EJECT)	

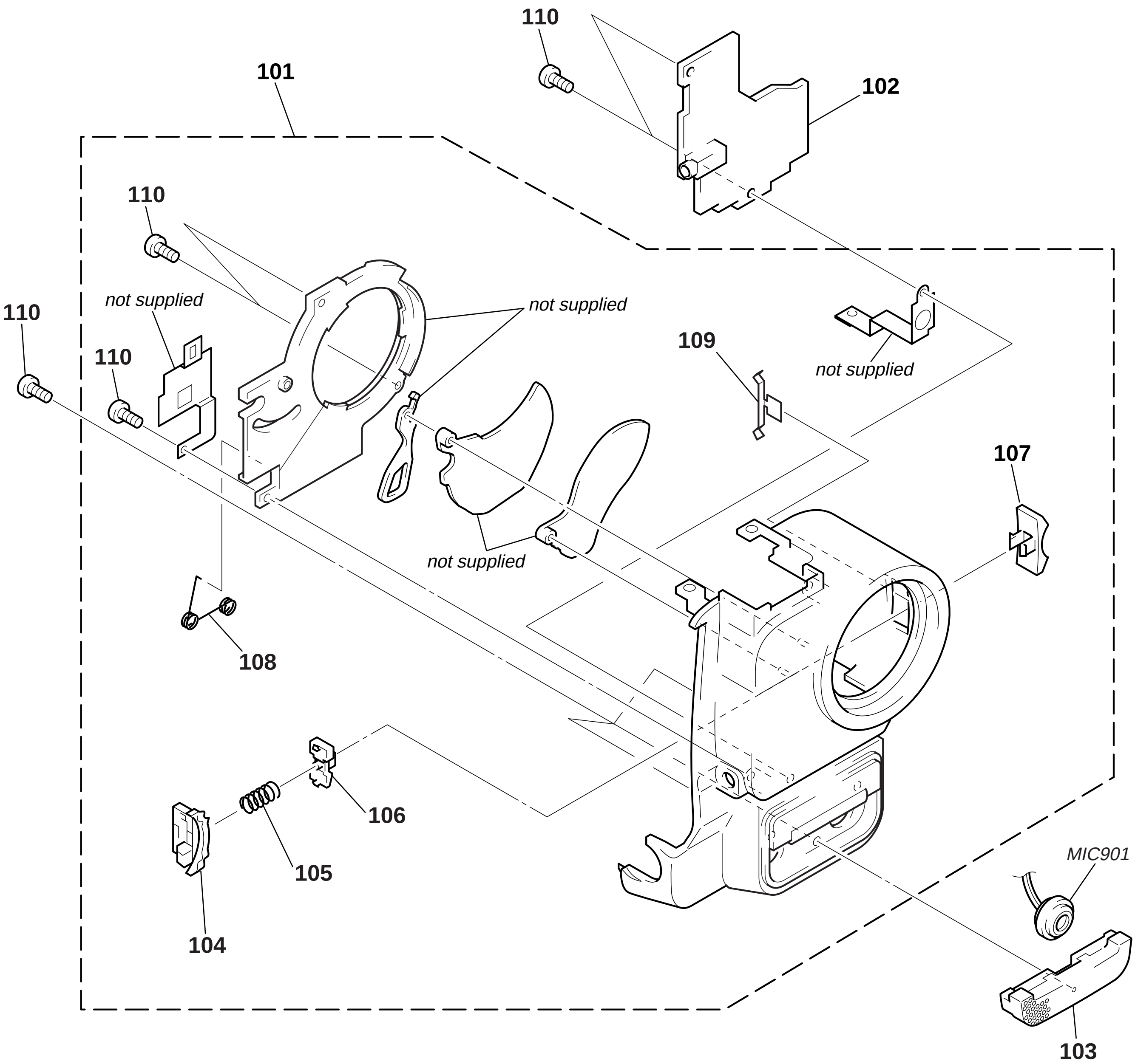
6-1-2. FRONT PANEL BLOCK ASSEMBLY (EXCEPT CCD-TR57)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

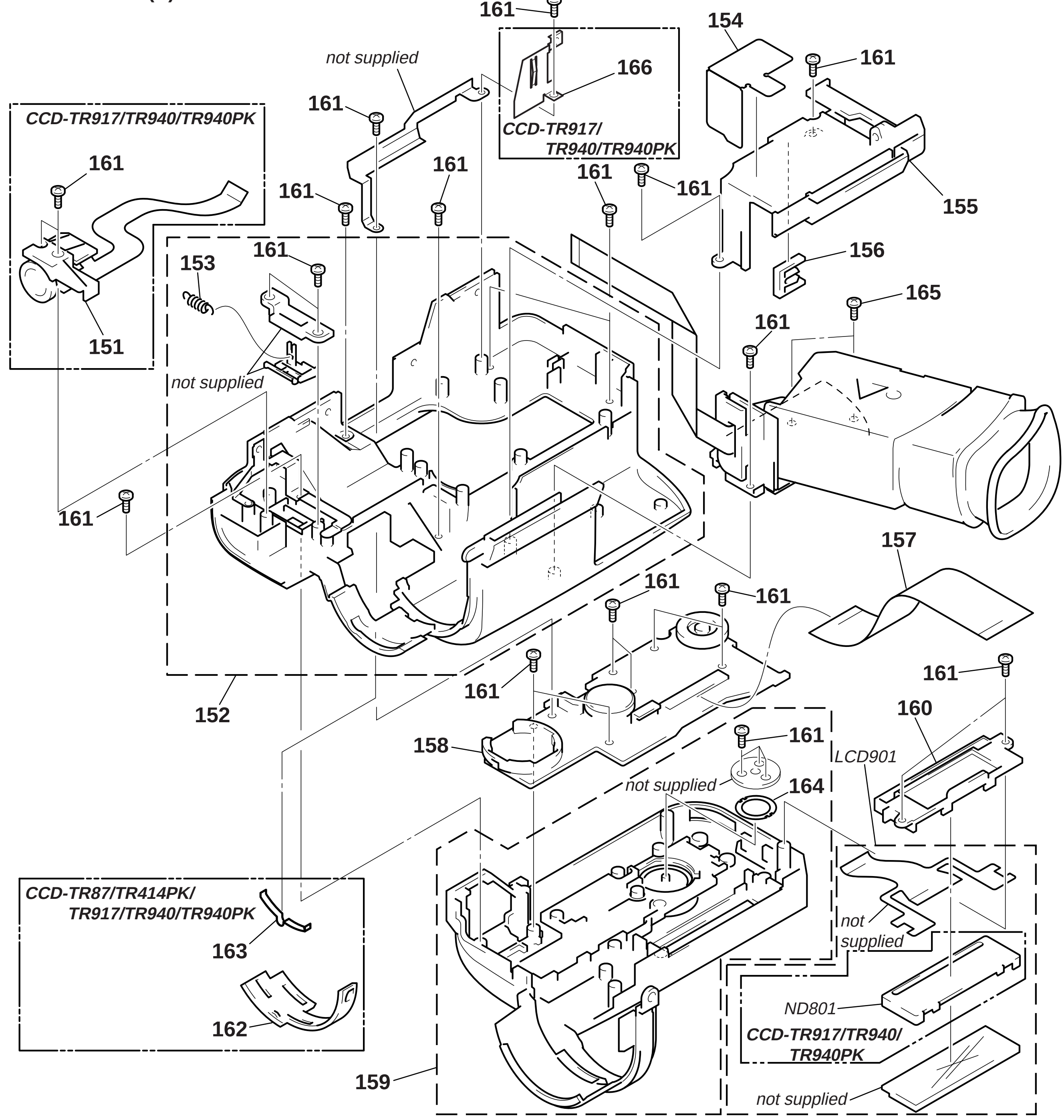
Ref. No.	Part No.	Description	Remark
51	X-3948-183-1	PANEL (870) ASSY, FRONT (TR917/TR940/TR940PK)	
51	X-3948-185-1	PANEL (870) ASSY, FRONT (TR67/TR413PK)	
51	X-3948-186-1	PANEL (870) ASSY, FRONT (TR87/TR414PK)	
52	A-7073-424-A	MA-311(MMIB) BOARD, COMPLETE (TR87/TR414PK)	
52	A-7073-428-A	MA-311(HCIB) BOARD, COMPLETE (TR917/TR940/TR940PK)	
52	A-7073-465-A	MA-311(ZB) BOARD, COMPLETE (TR67/TR413PK)	
53	X-3948-170-1	GRILLE (870) ASSY, MICROPHONE	
54	3-987-632-01	HOLDER, P KNOB	
55	3-973-619-01	SPRING, COMPRESSION	
56	3-987-633-01	BUTTON, LOCK	
57	3-987-631-01	KNOB, P	
58	3-987-882-01	SPRING, TORSION	
59	3-987-642-01	SPRING, CLICK	
60	3-948-339-61	TAPPING	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH) (TR917/TR940/TR940PK)	
⚠VL901	1-517-760-11	LIGHT, VIDEO	

6-1-3. FRONT PANEL BLOCK ASSEMBLY (CCD-TR57)



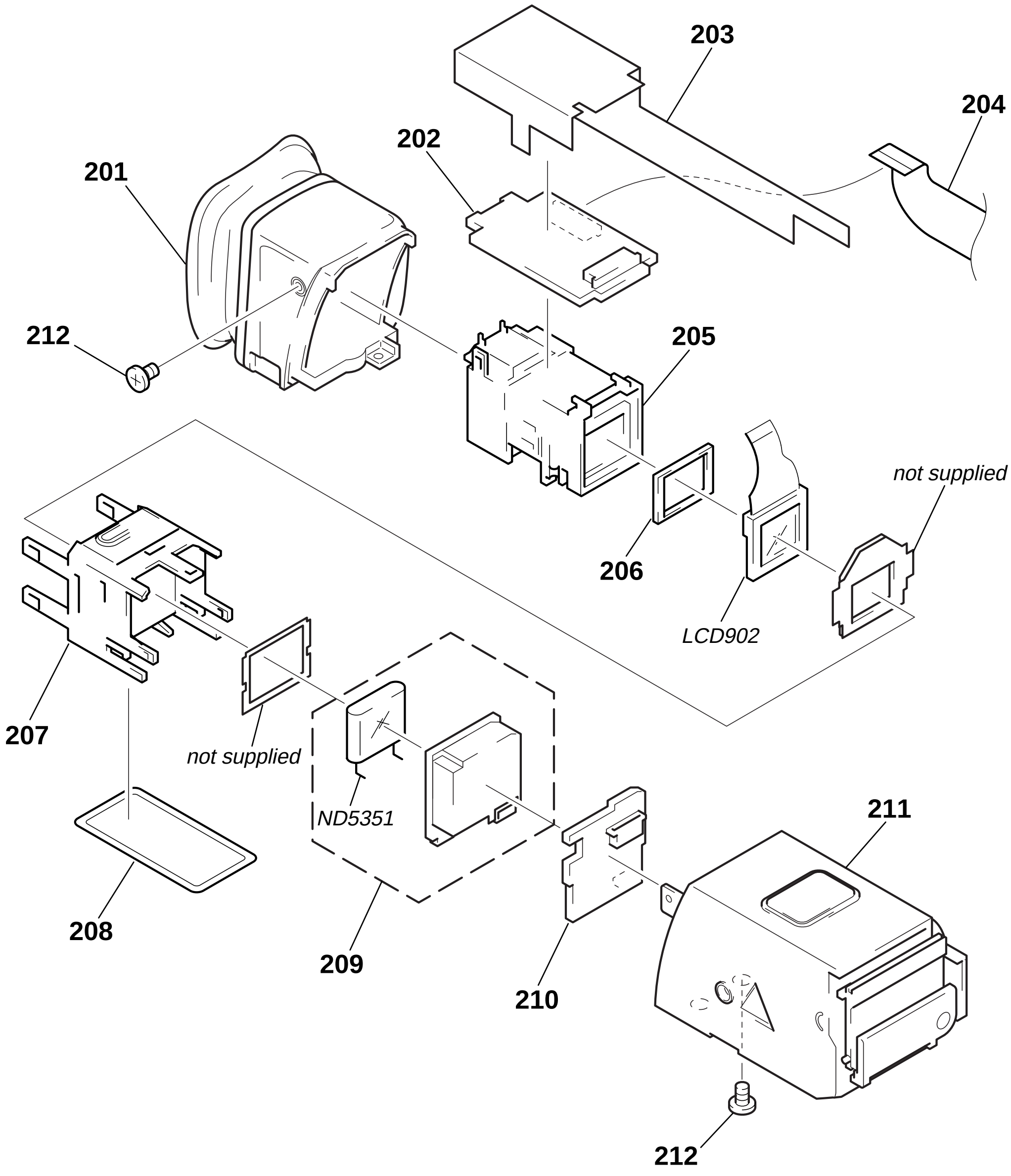
Ref. No.	Part No.	Description	Remark
101	X-3948-189-1	PANEL (870) ASSY, FRONT	
102	A-7073-463-A	MA-311(7ZL) BOARD, COMPLETE	
103	X-3948-170-1	GRILLE (870) ASSY, MICROPHONE	
104	3-987-632-01	HOLDER, P KNOB	
105	3-973-619-01	SPRING, COMPRESSION	
106	3-987-633-01	BUTTON, LOCK	
107	3-987-631-01	KNOB, P	
108	3-987-882-01	SPRING, TORSION	
109	3-987-642-01	SPRING, CLICK	
110	3-948-339-61	TAPPING	
MIC901	1-542-312-11	MICROPHONE	

6-1-4. CABINET (R) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	1-475-620-11	SWITCH BLOCK, CONTROL(MF-8500) (TR917/TR940/TR940PK)	
152	X-3948-255-1	CABINET (R) (864) ASSY (TR917/TR940)	
152	X-3948-256-1	CABINET (R) (843) ASSY (TR67/TR87)	
152	X-3948-257-1	CABINET (R) (842) ASSY (TR57)	
152	X-3948-259-1	CABINET (R) (863) ASSY (TR940PK)	
152	X-3948-262-1	CABINET (R) (843-2) ASSY (TR413PK/TR414PK)	
153	3-472-222-99	SPRING, TENSION	
* 154	3-987-842-01	SHEET, VF FLEXIBLE RETAINER	
155	X-3948-603-1	BASE (878), VF	
156	3-987-783-01	LOCK, TILT	
157	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
158	A-7073-425-A	CF-49(C) BOARD, COMPLETE (TR917/TR940/TR940PK)	
158	A-7073-466-A	CF-49(7C) BOARD, COMPLETE (TR57/TR67/TR87/TR413PK/TR414PK)	
159	X-3948-249-1	COVER (864C) ASSY, TR (TR940/TR940PK)	
159	X-3948-251-1	COVER (843) ASSY, TR (TR57/TR67/TR87/TR413PK/TR414PK)	
159	X-3948-393-1	COVER (864D) ASSY, TR (TR917)	
* 160	3-987-755-01	HOLDER (864), LCD (TR917/TR940/TR940PK)	
* 160	3-987-755-11	HOLDER (864), LCD (TR57/TR67/TR87/TR413PK/TR414PK)	
161	3-948-339-61	TAPPING	
162	3-987-744-01	KNOB, IR (TR87/TR414PK/TR917/TR940/TR940PK)	
163	3-987-739-01	SPRING, LINK PLATE (TR87/TR414PK/TR917/TR940/TR940PK)	
164	3-969-465-01	SPRING, AE	
165	3-948-339-01	SCREW, TAPPING	
166	9-987-742-01	PLATE, GROUND (TR917/TR940/TR940PK)	
LCD901	A-7093-473-A	INDICATION LCD BLOCK ASSY (TR57/TR67/TR87/TR413PK/TR414PK)	
LCD901	A-7093-486-A	INDICATION LCD BLOCK ASSY (TR917/TR940/TR940PK)	
ND801	1-517-759-11	LIGHT, BACK (TR917/TR940/TR940PK)	

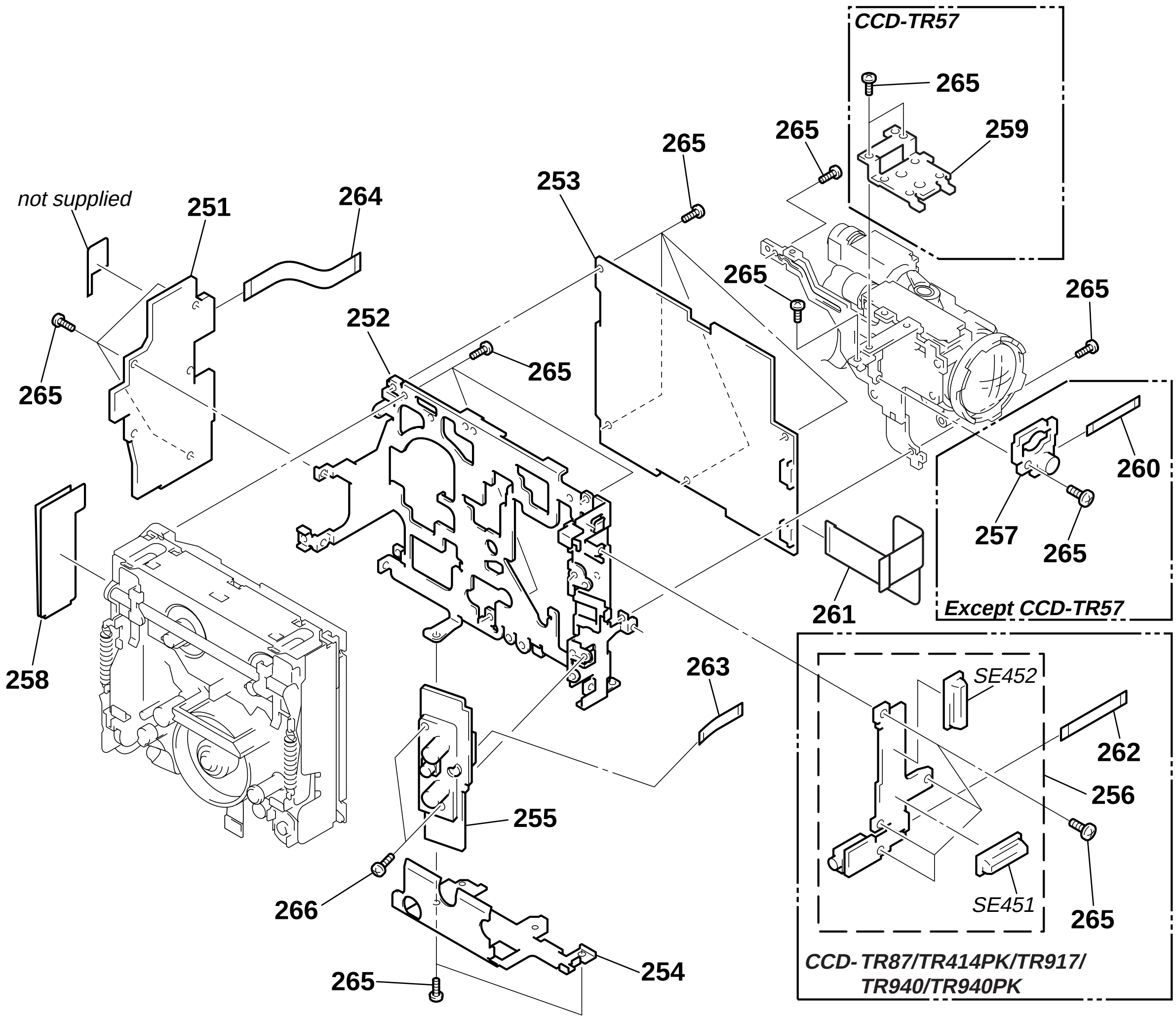
6-1-5. EVF BLOCK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
201	X-3948-237-1	CABINET (REAR)(SC)(N) ASSY,EVF	
202	A-7073-437-A	VF-119 BOARD, COMPLETE	
* 203	3-987-666-01	SHEET (860), INSULATING, VF	
204	1-668-962-11	FP-638 FLEXIBLE BOARD	
205	X-3948-229-1	LENS ASSY (860), VF	
* 206	3-960-302-11	CUSHION (1), LCD	
207	X-3946-886-1	HOLDER ASSY, PRISM	
* 208	3-987-667-01	SHEET, VF LIGHT INTERCEPTION	
209	A-7073-439-A	LB-54 BOARD, COMPLETE	
210	A-7073-438-A	VF-120 BOARD, COMPLETE	
211	X-3948-297-1	CABINET (FRONT) (864) ASSY,EVF (TR917/TR940/TR940PK)	
211	X-3948-298-1	CABINET (FRONT) (843) ASSY,EVF (TR57/TR67/TR87/TR413PK/TR414PK)	
212	3-968-729-61	SCREW (M2X3), LOCK ACE, P2	
LCD902	8-753-023-36	LCX024AK-5 (TR413PK)	
LCD902	8-753-023-37	LCX024AK-4/5 (TR57/TR67/TR87/TR414PK/TR917/TR940/TR940PK)	
⚠ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	

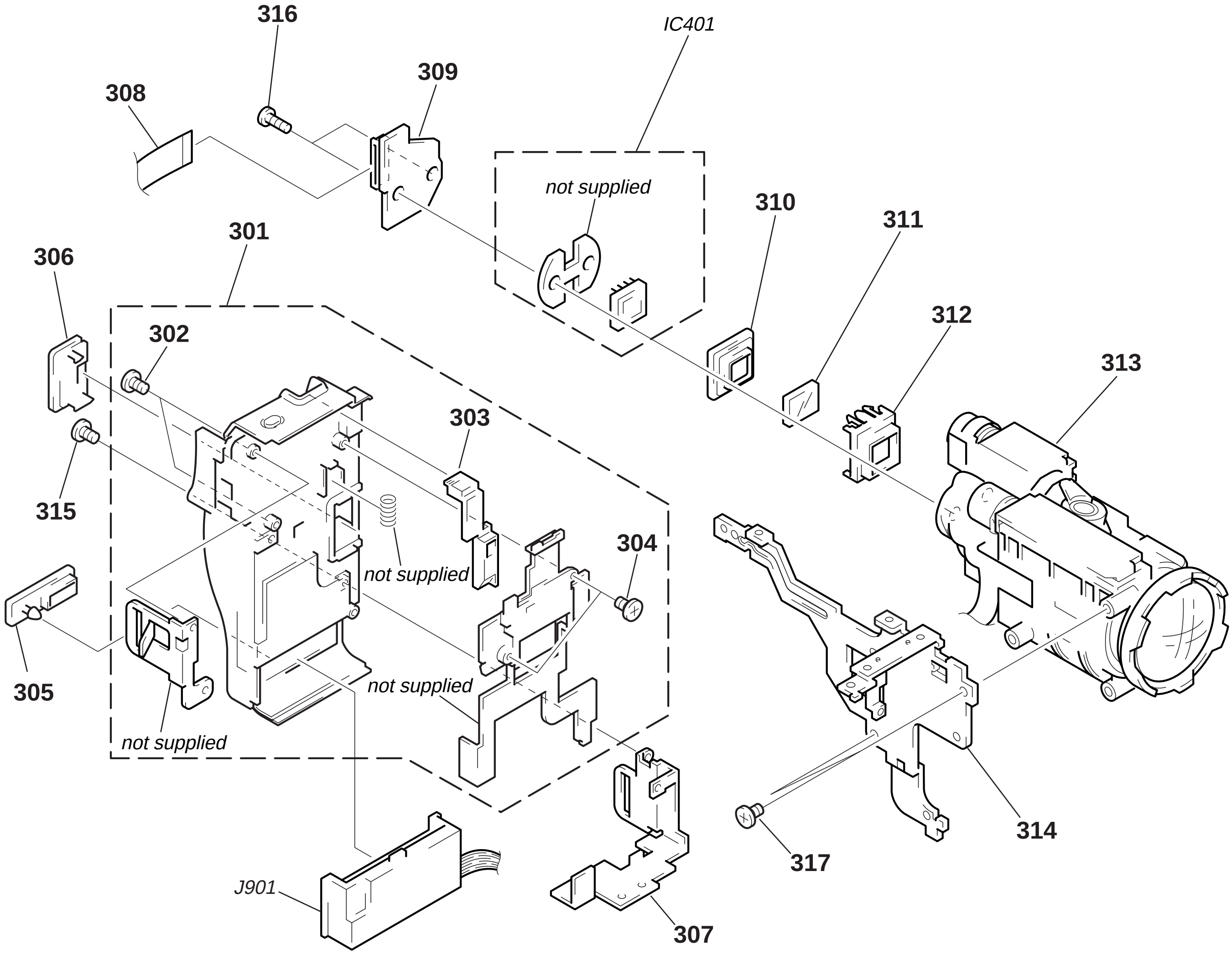
6-1-6. MAIN BOARDS BLOCK ASSEMBLY



Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

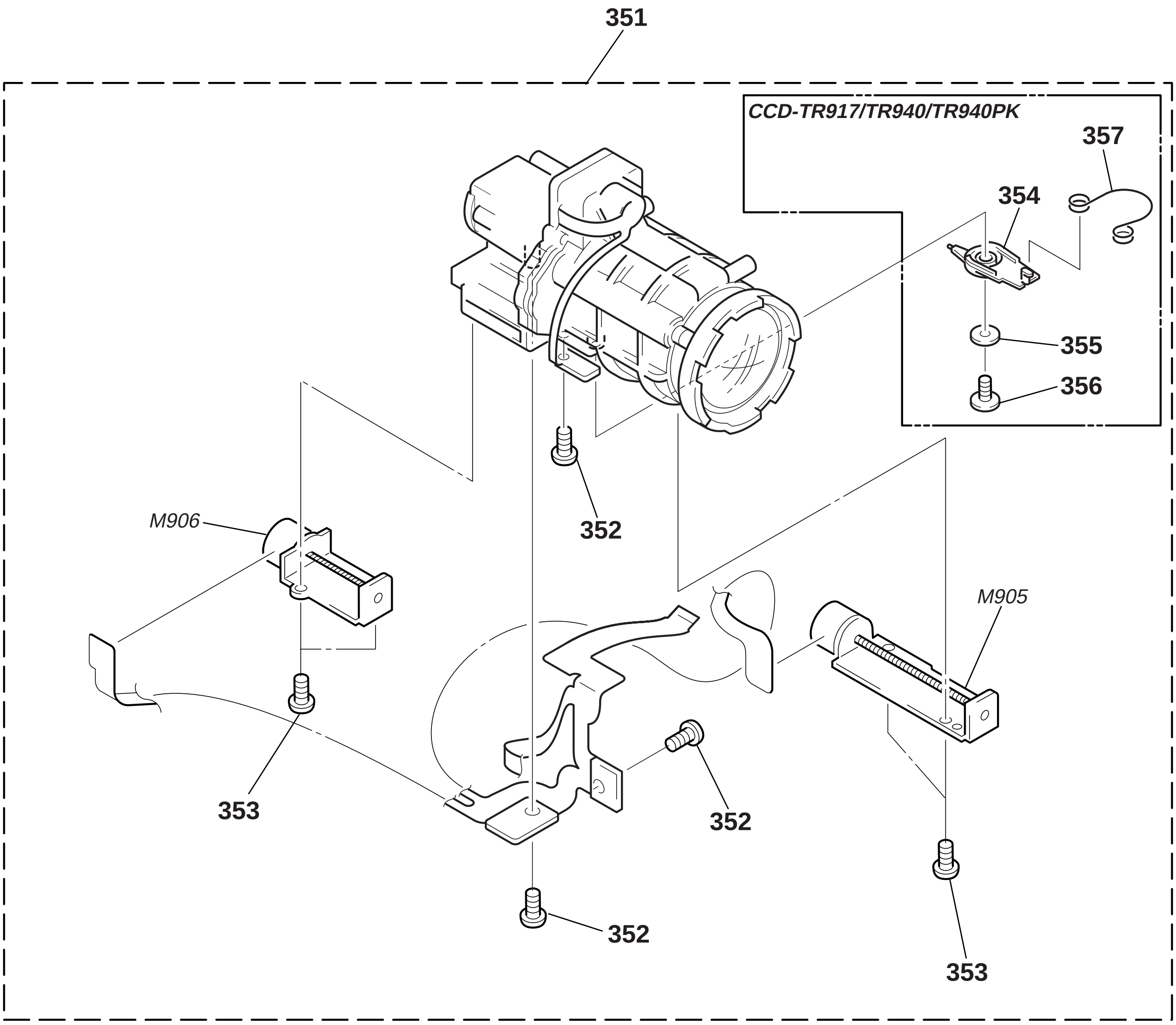
Ref. No.	Part No.	Description	Remark
251	A-7073-419-A	DD-105(CIBF) BOARD, COM PLETE (TR67/TR87/TR917/TR940)	
251	A-7073-462-A	DD-105(7CF) BOARD, COMPLETE (TR57)	
251	A-7073-464-A	DD-105(CIB) BOARD, COMPLETE (TR413PK/TR414PK/TR940PK)	
252	3-987-711-01	FRAME (A), MD	
253	A-7093-437-A	VC-195(HCIB0U) BOARD, COMPLETE (TR917/TR940/TR940PK)	
253	A-7093-439-A	VC-195(7MMCIBU) BOARD, COMPLETE (TR87/TR414PK)	
253	A-7093-440-A	VC-195(7ZCBU) BOARD, COM PLETE (TR57/RT67/TR413PK)	
254	3-987-675-01	FRAME (B), MD (EXCEPT TR917/TR940/TR940PK)	
254	X-3948-224-1	FRAME (B) ASSY, MD (TR917/TR940/TR940PK)	
255	A-7073-422-A	PJ-81(M) BOARD, COMPLETE (TR57/TR67/TR87/TR413PK/TR414PK)	
255	A-7073-426-A	PJ-81(H) BOARD, COMPLETE (TR917/TR940/TR940PK)	
256	A-7073-423-A	SE-65(MM) BOARD, COMPLETE (TR87/TR414PK)	
256	A-7073-427-A	SE-65(H) BOARD, COMPLETE (TR917/TR940/TR940PK)	
257	A-7073-421-A	VL-16 BOARD, COMPLETE (EXCEPT TR57)	
* 258	3-987-716-01	PROTECTOR, LS FLEXIBLE	
259	3-987-719-01	BRACKET, SHOE (TR57)	
260	1-668-961-11	FP-632 FLEXIBLE BOARD (EXCEPT TR57)	
261	1-668-960-11	FP-629 FLEXIBLE BOARD	
262	1-668-956-11	FP-620 FLEXIBLE BOARD (TR87/TR414PK/TR917/TR940/TR940PK)	
263	1-668-957-11	FP-621 FLEXIBLE BOARD	
264	1-668-958-11	FP-622 FLEXIBLE BOARD	
265	3-713-786-21	SCREW (M2X3)	
266	3-962-826-01	SCREW (2X4)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW) (TR87/TR414PK/TR917/TR940/TR940PK)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH) (TR87/TR414PK/TR917/TR940/TR940PK)	

6-1-7. BATTERY PANEL AND LENS BLOCK ASSEMBLY



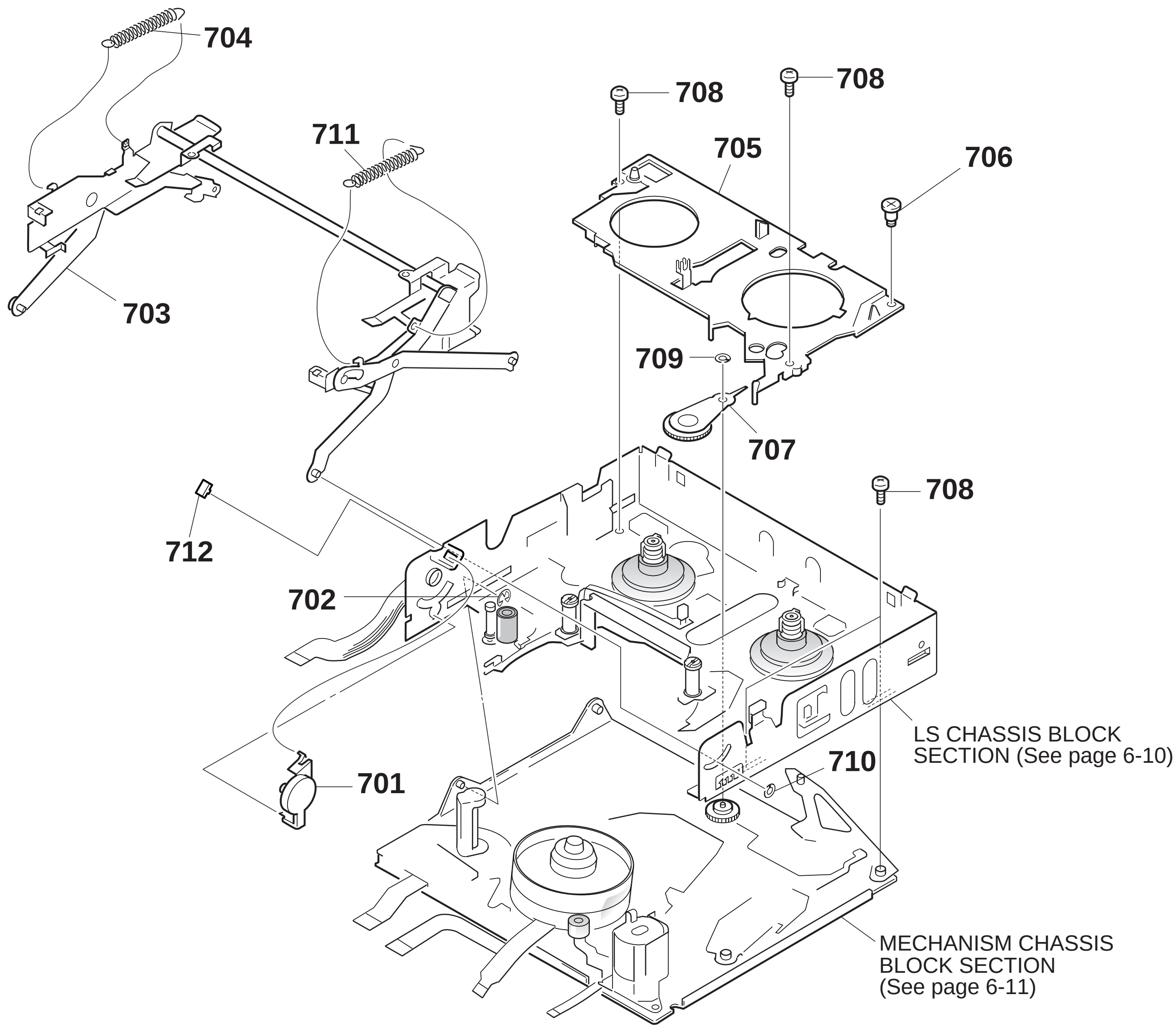
Ref. No.	Part No.	Description	Remark
301	X-3948-171-1	PANEL ASSY, BATTERY	
302	3-968-729-01	SCREW (M2X3), LOCK ACE, P2	
303	3-987-656-01	LID, JACK	
304	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
* 305	3-987-683-01	LID, BATTERY	
306	3-975-752-01	LID (BT), CPC	
307	3-987-679-01	SHEET METAL (LOWER), STRAP	
308	1-668-959-11	FP-623 FLEXIBLE BOARD	
309	A-7073-420-A	CD-181 BOARD, COMPLETE	
310	3-953-817-01	RUBBER (F), SEAL (TR57/TR67/TR413PK/TR414PK)	
310	3-968-054-11	RUBBER (FM), SHIELD (TR87/TR917/TR940/TR940PK)	
311	1-758-084-21	FILTER BLOCK, OPTICAL (TR87/TR917/TR940/TR940PK)	
311	1-758-133-21	FILTER BLOCK, OPTICAL (TR57/TR67/TR413PK/TR414PK)	
312	3-978-981-11	ADAPTOR (FK), CCD FITTING	
313	8-848-724-01	DEVICE, LENS, LSV-601A (SOC) (TR57/TR67/TR87/TR413PK/TR414PK)	
313	8-848-722-01	DEVICE, LENS LSV-600A (SOC) (TR917/TR940/TR940PK)	
314	3-987-712-01	FRAME, LENS	
315	3-962-826-01	SCREW (2X4)	
316	3-318-203-11	SCREW (B1.7X6), TAPPING	
317	3-948-339-61	TAPPING	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE) (TR57/TR67/TR413PK)	
IC401	A-7030-865-A	CCD BLOCK ASSY (209 SERVICE) (TR87/TR414PK/TR917/TR940/TR940PK)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	

6-1-8. ZOOM LENS BLOCK ASSEMBLY



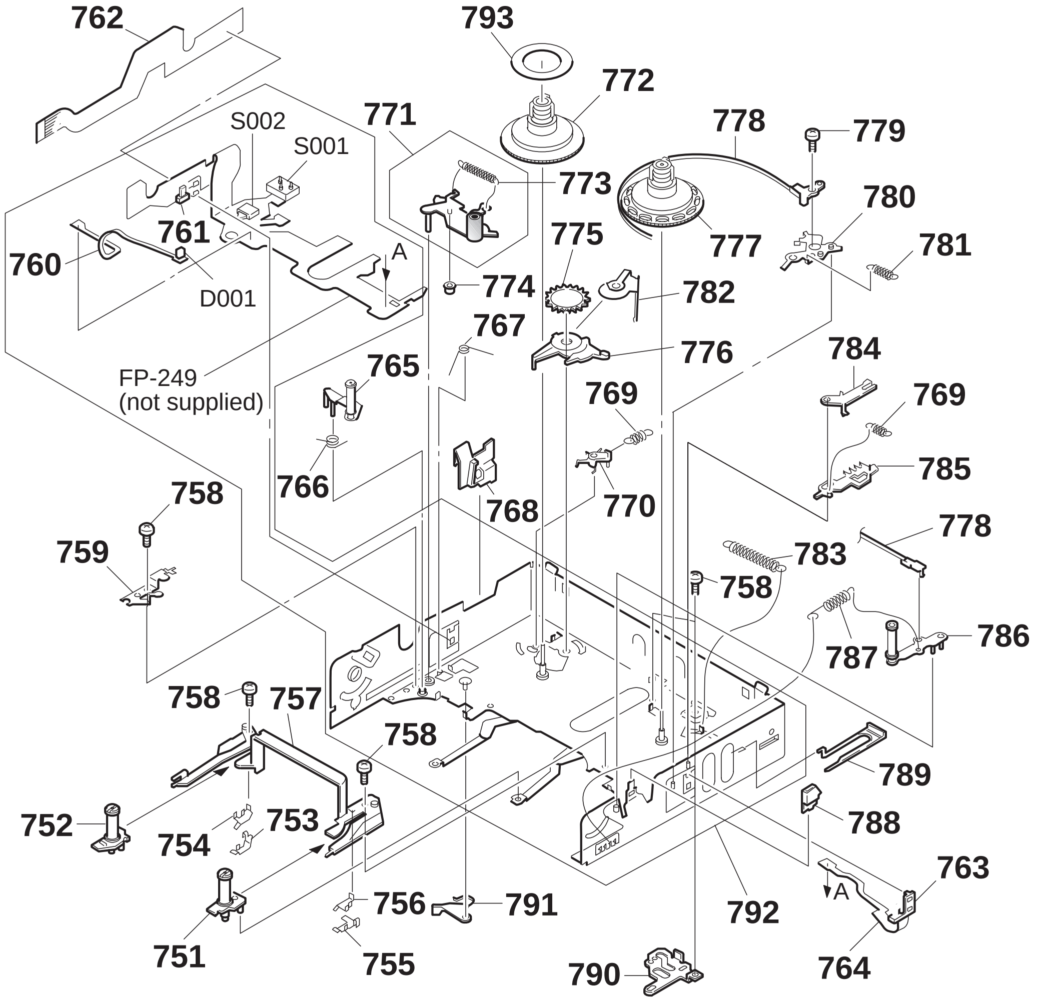
Ref. No.	Part No.	Description	Remark
351	8-848-722-01	DEVICE, LENS LSV-600A (SOC) (TR917/TR940/TR940PK)	
351	8-848-724-01	DEVICE, LENS LSV-601A (SOC) (TR57/TR67/TR87/TR413PK/TR414PK)	
352	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
353	3-713-791-41	SCREW (M1.7X5), TAPPING PS	
354	3-979-029-01	LEVER, IR	
355	2-327-405-01	WASHER	
356	2-623-756-21	SCREW (B1.7X5), P	
357	3-979-037-11	SPRING, RETURN	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	

6-1-9. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3945-400-X	CASSETTE COMPARTMENT ASSY	
704	3-965-587-03	SPRING, TENSION	
705	3-965-584-08	RETAINER, GOOSENECK	
706	3-976-055-01	SCREW (M1.4X1)	
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4X2.5)	
709	3-331-007-21	WASHER	
710	3-727-176-01	WASHER, STOPPER	
711	3-973-268-01	SPRING, TENSION	
712	3-971-076-01	FASTENER, D	

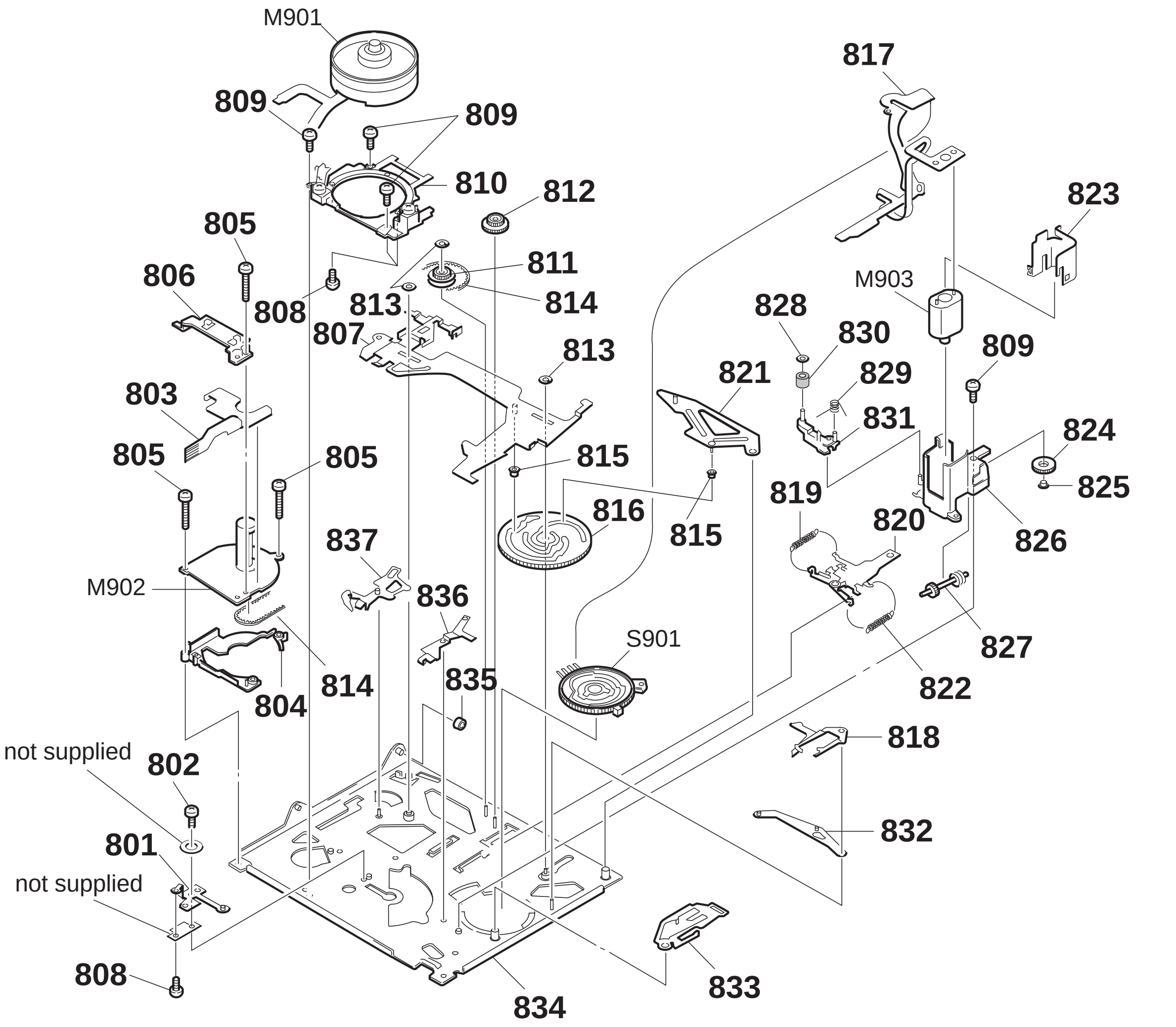
6-1-10. LS CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING, TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-03	RATCHET, T	
771	X-3945-394-1	ARM ASSY, PINCH	
772	X-3945-398-2	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	

Ref. No.	Part No.	Description	Remark
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING, TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION COIL	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
* 793	3-972-838-01	SPACER, REEL	
D001	8-719-988-42	DIODE GL453	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

6-1-11. MECHANISM CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-01	SLIDER (2), M	
808	3-971-939-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR (LIMITTER ARM T), COIL	
819	3-965-536-01	SPRING (LIMITTER ARM T), COIL	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-01	ARM, LS	
822	3-965-535-01	SPRING (LIMITTER ARM S), COIL	

Ref. No.	Part No.	Description	Remark
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING, TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3947-915-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R) (3 HEAD) (TR57/TR67/TR87/TR413PK/TR414PK)	
M901	A-7048-842-A	DRUM ASSY (DGH-0E1A-R) (5 HEAD) (TR914/TR940/TR940PK)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- Abbreviation
  Canadian model is abbreviated as CND.

Ref. No.	Part No.	Description	Remark
	A-7073-420-A	CD-181 BOARD, COMPLETE	
		**********************	
		(Ref. No. 3,000 Series)	
		(IC 401 is not included to mounted board.)	
		< CAPACITOR >	
C401	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C405	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C406	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
		< CONNECTOR >	
CN401	1-766-346-21	CONNECTOR, FFC/FPC 16P	
		< IC >	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE) (CCD IMAGER) (TR57/TR67/TR413PK)	
IC401	A-7030-865-A	CCD BLOCK ASSY (209 SERVICE) (CCD IMAGER) (TR87/TR414PK/TR917/TR940/TR940PK)	
		< COIL >	
L401	1-414-757-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q402	8-729-117-73	TRANSISTOR 2SC4178-F13F14-T1	
		< RESISTOR >	
R404	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R405	1-216-809-11	METAL CHIP 100 5% 1/16W	

Ref. No.	Part No.	Description	Remark
	A-7073-425-A	CF-49(C) BOARD, COMPLETE	
		**********************	
		(TR917/TR940/TR940PK)	
	A-7073-466-A	CF-49(7C) BOARD, COMPLETE	
		**********************	
		(TR57/TR67/TR87/TR413PK/TR414PK)	
		(Ref. No. 3,000 Series)	
		< BATTERY HOLDER >	
BH001	1-550-104-11	HOLDER, BATTERY	
BZ001	1-529-107-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C003	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
		< CONNECTOR >	
CN001	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P	
CN002	1-774-765-11	CONNECTOR, FFC/FPC 8P (TR917/TR940/TR940PK)	
CN007	1-779-334-11	CONNECTOR, FFC/FPC 20P	
CN009	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P	
		< DIODE >	
D005	8-719-420-14	DIODE MA8082-TX	
D006	8-719-420-14	DIODE MA8082-TX	
D008	8-719-404-49	DIODE MA111-TX	
		< IC >	
IC001	8-759-494-53	IC BU9729K-E2	
		< TRANSISTOR >	
Q003	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX (TR917/TR940/TR940PK)	
Q005	8-729-230-72	TRANSISTOR 2SA1362-YG-EL (TR917/TR940/TR940PK)	
		< RESISTOR >	
R003	1-216-833-11	METAL CHIP 10K 5% 1/16W (TR917/TR940/TR940PK)	
R005	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R006	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R007	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R008	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R009	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R011	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R012	1-216-864-11	METAL CHIP 0 5% 1/16W	
R013	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R015	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R016	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R019	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R020	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R022	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R023	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R025	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

Be sure to read “Note on the CCD Imager replacement” on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description			Remark
R026	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R028	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R029	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R031	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R034	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R035	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R036	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R038	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R039	1-216-838-11	METAL CHIP	27K	5%	1/16W
R041	1-216-838-11	METAL CHIP	27K	5%	1/16W
R042	1-216-809-11	METAL CHIP	100	5%	1/16W
					(TR917/TR940/TR940PK)
R044	1-216-809-11	METAL CHIP	100	5%	1/16W
					(TR917/TR940/TR940PK)
R046	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R047	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R048	1-216-838-11	METAL CHIP	27K	5%	1/16W
R049	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(TR917/TR940/TR940PK)
R050	1-216-853-11	METAL CHIP	470K	5%	1/16W
					(TR917/TR940/TR940PK)
R051	1-216-837-11	METAL CHIP	22K	5%	1/16W
					(TR917/TR940/TR940PK)
R052	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(TR917/TR940/TR940PK)
R053	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR57/TR67/TR87/TR413PK/TR414PK)
		< SWITCH >			
S003	1-762-851-21	SWITCH, KEY BOARD (DATE)			
S006	1-762-851-21	SWITCH, KEY BOARD (PICTURE EFECT)			
S008	1-762-851-21	SWITCH, KEY BOARD (COUNTER RESET)			
S010	1-762-851-21	SWITCH, KEY BOARD (MENU)			
S012	1-771-029-31	SWITCH, TACTILE (EXPOSURE)			
					(TR917/TR940/TR940PK)
S015	1-771-025-21	SWITCH, ROTARY (ENCODER) (SEL/PUSH EXEC)			
S017	1-762-851-21	SWITCH, KEY BOARD (BACK LIGHT)			
S018	1-762-851-21	SWITCH, KEY BOARD (TITLE)			
S020	1-762-442-21	SWITCH, ROTARY (PROGRAM AE)			
S021	1-762-851-21	SWITCH, KEY BOARD (TIME)			
S024	1-762-648-21	SWITCH, SLIDE (START/STOP MODE)			

Ref. No.	Part No.	Description			Remark
	A-7073-419-A	DD-105(CIBF) BOARD, COMPLETE			
		****************************			
					(TR67/TR87/TR917/TR940)
	A-7073-462-A	DD-105(7CF) BOARD, COMPLETE (TR57)			
		****************************			
	A-7073-464-A	DD-105(CIB) BOARD, COMPLETE			
		****************************			
					(TR413PK/TR414PK/TR940PK)
					(Ref. No. 2,000 Series)
		< CAPACITOR >			
C801	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C802	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C803	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C804	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C805	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C806	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C807	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C808	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C809	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C810	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C811	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C812	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C814	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C815	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C816	1-119-751-91	TANTAL. CHIP	22uF	20%	16V
C817	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C819	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C820	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C821	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C823	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C824	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C825	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C832	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C834	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C836	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C837	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C838	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C841	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C843	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C844	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C846	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C847	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C848	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C849	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C850	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C851	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C854	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C855	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C857	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C860	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C861	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C864	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C867	1-164-346-11	CERAMIC CHIP	1uF		16V
C868	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C871	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C872	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C876	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C877	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
* CN801	1-580-756-21	PIN, CONNECTOR 7P			
CN931	1-691-520-11	CONNECTOR, BOARD TO BOARD 48P			
CN932	1-766-346-21	CONNECTOR, FFC/FPC 16P			
CN934	1-766-673-21	CONNECTOR, FFC/FPC 12P			
CN935	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
		< DIODE >			
D801	8-719-067-36	DIODE MA3ZD1200LS0			

Ref. No.	Part No.	Description	Remark
D802	8-719-067-36	DIODE MA3ZD1200LS0	
D803	8-719-067-36	DIODE MA3ZD1200LS0	
D804	8-719-067-36	DIODE MA3ZD1200LS0	
D805	8-719-067-36	DIODE MA3ZD1200LS0	
D809	8-719-027-77	DIODE MA796-TX	
D813	8-719-420-14	DIODE MA8082-TX	
D814	8-719-420-14	DIODE MA8082-TX	
D815	8-719-420-14	DIODE MA8082-TX	
D816	8-719-027-76	DIODE 1SS357-TPH3	
D817	8-719-421-27	DIODE MA728-TX	
D932	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D933	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D934	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D935	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D936	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D938	8-719-420-14	DIODE MA8082-TX	
		< FERRITE BEAD >	
FB931	1-414-228-11	INDUCTOR CHIP 0UH	
FB932	1-414-228-11	INDUCTOR CHIP 0UH	
FB933	1-414-228-11	INDUCTOR CHIP 0UH	
FB934	1-414-228-11	INDUCTOR CHIP 0UH	
		< IC >	
IC801	8-759-384-78	IC SN104241PM-TEB	
		< COIL >	
L805	1-424-674-11	INDUCTOR 0uH	
L806	1-409-532-41	INDUCTOR 0uH	
L806	1-424-675-11	INDUCTOR 0uH	
L807	1-424-674-11	INDUCTOR 0uH	
L808	1-424-674-11	INDUCTOR 0uH	
L809	1-424-674-11	INDUCTOR 0uH	
L810	1-414-396-21	INDUCTOR 4.7uH	
L811	1-414-396-21	INDUCTOR 4.7uH	
L812	1-414-396-21	INDUCTOR 4.7uH	
L813	1-414-396-21	INDUCTOR 4.7uH	
L814	1-414-396-21	INDUCTOR 4.7uH	
L815	1-414-396-21	INDUCTOR 4.7uH	
L816	1-414-396-21	INDUCTOR 4.7uH	
L817	1-414-396-21	INDUCTOR 4.7uH	
L818	1-414-396-21	INDUCTOR 4.7uH	
L819	1-414-400-11	INDUCTOR 22uH	
		< LINE FILTER >	
LF801	1-411-957-11	FILTER, COMMON MODE	
		< IC LINK >	
⚠PS801	1-533-760-21	FUSE (SMD) (1.4A/24V) (TR57/TR67/TR87/TR917/TR940)	
⚠PS801	1-533-761-21	LINK, IC (SMD) (1.4A/24V) (TR413PK/TR414PK/TR940PK)	
⚠PS802	1-533-760-21	FUSE (SMD) (1.4A/24V) (TR57/TR67/TR87/TR917/TR940)	
⚠PS802	1-533-761-21	LINK, IC (SMD) (1.4A/24V) (TR413PK/TR414PK/TR940PK)	
⚠PS803	1-533-760-21	FUSE (SMD) (1.4A/24V) (TR57/TR67/TR87/TR917/TR940)	
⚠PS803	1-533-761-21	LINK, IC (SMD) (1.4A/24V) (TR413PK/TR414PK/TR940PK)	
⚠PS804	1-533-760-21	FUSE (SMD) (1.4A/24V) (TR57/TR67/TR87/TR917/TR940)	
⚠PS804	1-533-761-21	LINK, IC (SMD) (1.4A/24V) (TR413PK/TR414PK/TR940PK)	
⚠PS806	1-533-760-21	FUSE (SMD) (1.4A/24V) (TR67/TR87/TR917/TR940)	
⚠PS806	1-533-761-21	LINK, IC (SMD) (1.4A/24V) (TR413PK/TR414PK/TR940PK)	
		< TRANSISTOR >	
Q801	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q802	8-729-041-69	TRANSISTOR MMSF5P02HDR2	
Q803	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q804	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q805	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q807	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q808	8-729-043-94	TRANSISTOR CPH3106-TL	
Q809	8-729-043-94	TRANSISTOR CPH3106-TL	
Q810	8-729-043-94	TRANSISTOR CPH3106-TL	
Q812	8-729-041-24	TRANSISTOR NDS355AN	
Q814	8-729-043-94	TRANSISTOR CPH3106-TL	
Q815	8-729-043-94	TRANSISTOR CPH3106-TL	
Q817	8-729-041-24	TRANSISTOR NDS355AN	
Q823	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q826	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q829	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q830	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q831	8-729-041-23	TRANSISTOR NDS356AP	
Q834	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q837	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q841	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q842	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q843	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q846	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q847	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q851	8-729-041-69	TRANSISTOR MMSF5P02HDR2	
Q852	8-729-017-61	TRANSISTOR 2SB1581-T1	
Q853	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q854	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q855	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q856	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q932	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q933	8-729-037-74	TRANSISTOR UN9213J-(K8).SO (EXCEPT TR57)	
Q934	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO (EXCEPT TR57)	
		< RESISTOR >	
R801	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R802	1-218-893-11	RES,CHIP 82K 0.50% 1/16W	
R803	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R804	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R805	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R806	1-218-879-11	RES,CHIP 22K 0.50% 1/16W	
R807	1-216-839-11	METAL CHIP 33K 5% 1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
R808	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R809	1-216-813-11	METAL CHIP	220	5%	1/16W
R810	1-216-837-11	METAL CHIP	22K	5%	1/16W
R811	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R812	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R813	1-216-857-11	METAL CHIP	1M	5%	1/16W
R814	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R815	1-216-813-11	METAL CHIP	220	5%	1/16W
R816	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R817	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R818	1-216-813-11	METAL CHIP	220	5%	1/16W
R819	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R820	1-216-845-11	METAL CHIP	100K	5%	1/16W
R821	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R822	1-216-150-91	RES,CHIP	10	5%	1/8W
R824	1-216-837-11	METAL CHIP	22K	5%	1/16W
R825	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R826	1-216-821-11	METAL CHIP	1K	5%	1/16W
R827	1-216-821-11	METAL CHIP	1K	5%	1/16W
R828	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W
R830	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R831	1-216-841-11	METAL CHIP	47K	5%	1/16W
R832	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R833	1-216-839-11	METAL CHIP	33K	5%	1/16W
R834	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R835	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R836	1-216-837-11	METAL CHIP	22K	5%	1/16W
R837	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R838	1-216-837-11	METAL CHIP	22K	5%	1/16W
R839	1-216-837-11	METAL CHIP	22K	5%	1/16W
R840	1-216-839-11	METAL CHIP	33K	5%	1/16W
R841	1-216-834-11	METAL CHIP	12K	5%	1/16W
R865	1-216-841-11	METAL CHIP	47K	5%	1/16W
R866	1-216-837-11	METAL CHIP	22K	5%	1/16W
R867	1-216-296-91	SHORT 0 (EXCEPT TR57)			
R870	1-216-857-11	METAL CHIP	1M	5%	1/16W
R871	1-216-857-11	METAL CHIP	1M	5%	1/16W
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W
R873	1-216-841-11	METAL CHIP	47K	5%	1/16W
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W
R880	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R881	1-216-864-11	METAL CHIP	0	5%	1/16W
R882	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R885	1-216-845-11	METAL CHIP	100K	5%	1/16W
R889	1-216-841-11	METAL CHIP	47K	5%	1/16W
R890	1-216-845-11	METAL CHIP	100K	5%	1/16W
R894	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R895	1-216-837-11	METAL CHIP	22K	5%	1/16W
R898	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R899	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R900	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R901	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R908	1-216-841-11	METAL CHIP	47K	5%	1/16W
R910	1-216-833-11	METAL CHIP	10K	5%	1/16W
R911	1-218-883-11	RES,CHIP	33K	0.50%	1/16W

Ref. No.	Part No.	Description			Remark
R912	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R913	1-216-857-11	METAL CHIP	1M	5%	1/16W
R916	1-216-864-11	METAL CHIP	0	5%	1/16W
R921	1-216-296-91	SHORT 0			
R922	1-216-296-91	SHORT 0			
R923	1-216-296-91	SHORT 0			
R932	1-216-841-11	METAL CHIP	47K	5%	1/16W (EXCEPT TR57)
R933	1-216-821-11	METAL CHIP	1K	5%	1/16W
R934	1-216-821-11	METAL CHIP	1K	5%	1/16W
R935	1-216-821-11	METAL CHIP	1K	5%	1/16W
R936	1-216-821-11	METAL CHIP	1K	5%	1/16W
R937	1-216-821-11	METAL CHIP	1K	5%	1/16W
R938	1-216-821-11	METAL CHIP	1K	5%	1/16W
R939	1-216-821-11	METAL CHIP	1K	5%	1/16W
R940	1-216-819-11	METAL CHIP	680	5%	1/16W (EXCEPT TR57)
R941	1-216-821-11	METAL CHIP	1K	5%	1/16W
R942	1-216-821-11	METAL CHIP	1K	5%	1/16W
R943	1-216-029-00	METAL CHIP	150	5%	1/10W
		< TRANSFORMER >			
⚠T801	1-431-749-11	TRANSFORMER, DC/DC CONVERTER			

FP-249 FLEXIBLE BOARD
****
(Ref. No. 8,000 Series)

Ref. No.	Part No.	Description
	1-658-214-11	FP-356 FLEXIBLE BOARD
	3-965-551-01	HOLDER (S), SENSOR
	3-965-552-01	HOLDER (T), SENSOR
		< HALL ELEMENT >
H001	8-719-033-37	ELEMENT, HALL HW-105C
H002	8-719-033-37	ELEMENT, HALL HW-105C
		< TRANSISTOR >
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F
		< SWITCH >
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi 8 MP, ME/MP, REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C.C. LOCK)

1-658-213-11 FP-355 FLEXIBLE BOARD
****
(Ref. No. 8,000 Series)

Ref. No.	Part No.	Description
		< DIODE >
D001	8-719-988-42	DIODE GL453

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
	A-7073-439-A	LB-54 BOARD, COMPLETE ************************	(Ref. No. 10,000 Series)
⚠ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	
		< CAPACITOR >	
C5351	1-113-642-11	TANTAL. CHIP 47uF 20% 10V	
C5352	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C5353	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C5354	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C5355	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C5356	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
		< CONNECTOR >	
CN5351	1-784-564-11	CONNECTOR, BOARD TO BOARD 12P	
		< COIL >	
L5351	1-412-031-11	INDUCTOR CHIP 47uH	
L5352	1-412-029-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q5351	8-729-039-24	TRANSISTOR FX216-TL1	
		< RESISTOR >	
R5351	1-216-839-11	METAL CHIP 33K 5% 1/16W	
		< TRANSFORMER >	
⚠T5351	1-426-848-51	TRANSFORMER, INVERTER	
	A-7073-424-A	MA-311(MMIB) BOARD, COMPLETE ******************************	(TR87/TR414PK)
	A-7073-428-A	MA-311(HCIB) BOARD, COMPLETE *****************************	(TR917/TR940/TR940PK)
	A-7073-463-A	MA-311(7ZL) BOARD, COMPLETE (TR57) ***************************	
	A-7073-465-A	MA-311(ZB) BOARD, COMPLETE **************************	(TR67/TR413PK) (Ref. No. 3,000 Series)
		< CAPACITOR >	
C301	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	(EXCEPT TR57/TR67/TR413PK)
C302	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C303	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C304	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C305	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C306	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(EXCEPT TR57)
C321	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	(EXCEPT TR917/TR940/TR940PK)
C322	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	(EXCEPT TR917/TR940/TR940PK)
C323	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(EXCEPT TR917/TR940/TR940PK)
C324	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C325	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C326	1-119-749-91	TANTAL. CHIP 33uF 20% 4V	(EXCEPT TR917/TR940/TR940PK)
C327	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	(EXCEPT TR917/TR940/TR940PK)
C328	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR917/TR940/TR940PK)
C329	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(EXCEPT TR917/TR940/TR940PK)
C330	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C331	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR917/TR940/TR940PK)
C332	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(EXCEPT TR917/TR940/TR940PK)
C333	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR917/TR940/TR940PK)
C334	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(TR917/TR940/TR940PK)
C335	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR917/TR940/TR940PK)
C336	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR917/TR940/TR940PK)
C337	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR917/TR940/TR940PK)
C338	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	(TR917/TR940/TR940PK)
C339	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C340	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR917/TR940/TR940PK)
C341	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	(TR917/TR940/TR940PK)
C342	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C343	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR917/TR940/TR940PK)
C344	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR917/TR940/TR940PK)
C345	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(TR917/TR940/TR940PK)
C346	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C348	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR917/TR940/TR940PK)
C349	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(TR917/TR940/TR940PK)
C350	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR917/TR940/TR940PK)
C351	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C352	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	(TR917/TR940/TR940PK)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
C353	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR917/TR940/TR940PK)
C354	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	(TR917/TR940/TR940PK)
C355	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR917/TR940/TR940PK)
C356	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C357	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR917/TR940/TR940PK)
C358	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C359	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	(TR917/TR940/TR940PK)
C360	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C361	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C362	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C363	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	(TR917/TR940/TR940PK)
C364	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR917/TR940/TR940PK)
C365	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C366	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C367	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR917/TR940/TR940PK)
C368	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR917/TR940/TR940PK)
C369	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	(TR917/TR940/TR940PK)
C370	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	(TR917/TR940/TR940PK)
C371	1-164-346-11	CERAMIC CHIP 1uF 16V	(TR917/TR940/TR940PK)
C372	1-164-346-11	CERAMIC CHIP 1uF 16V	(TR917/TR940/TR940PK)
C373	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TR917/TR940/TR940PK)
C376	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C377	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C378	1-165-128-11	CERAMIC CHIP 0.22uF 16V	(TR917/TR940/TR940PK)
		< CONNECTOR >	
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD) 2P	
* CN302	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD) 2P	(TR917/TR940/TR940PK)
CN303	1-779-334-11	CONNECTOR, FFC/FPC 20P	
		< DIODE >	
D301	8-719-061-86	DIODE DCR2810	(EXCEPT TR57/TR67/TR413PK)
D302	8-749-060-65	DIODE DCC3810	(EXCEPT TR57/TR67/TR413PK)
D303	8-719-061-82	DIODE TLSU1002 (TPX1,SONY)	
D305	8-719-404-49	DIODE MA111-TX (EXCEPT TR57)	
D321	8-719-420-14	DIODE MA8082-TX (TR917/TR940/TR940PK)	
D322	8-719-420-14	DIODE MA8082-TX	
		< FUSE >	
⚠F301	1-533-874-11	FUSE, MICRO (200mA/24V)	(EXCEPT TR57/TR67/TR413PK)
		< IC >	
IC301	8-749-012-83	IC RS-180-T (R) (EXCEPT TR57)	
IC321	8-759-339-63	IC NJM2118V-TE2	(EXCEPT TR917/TR940/TR940PK)
IC322	8-759-494-54	IC AN2900FH-EB (TR917/TR940/TR940PK)	
		< JACK >	
J301	1-568-027-11	JACK, SMALL TYPE (MIC)	(EXCEPT TR917/TR940/TR940PK)
J301	1-691-737-11	JACK, SMALL TYPE (MIC)	(TR917/TR940/TR940PK)
		< COIL >	
L301	1-414-754-11	INDUCTOR 10uH	(EXCEPT TR57/TR67/TR413PK)
		< TRANSISTOR >	
Q301	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	(EXCEPT TR57/TR67/TR413PK)
Q302	8-729-122-63	TRANSISTOR 2SA1226-T1E4	(EXCEPT TR57/TR67/TR413PK)
Q303	8-729-140-75	TRANSISTOR 2SD999-T1-CLCK	(EXCEPT TR57/TR67/TR413PK)
Q304	8-729-402-42	TRANSISTOR UN5213-TX	
Q321	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	(EXCEPT TR917/TR940/TR940PK)
Q322	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	(EXCEPT TR917/TR940/TR940PK)
		< RESISTOR >	
R301	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(EXCEPT TR57/TR67/TR413PK)
R302	1-216-810-11	METAL CHIP 120 5% 1/16W	(EXCEPT TR57/TR67/TR413PK)
R304	1-216-311-00	METAL CHIP 6.8 5% 1/10W	(EXCEPT TR57/TR67/TR413PK)
R305	1-216-302-00	METAL CHIP 2.7 5% 1/10W	(EXCEPT TR57/TR67/TR413PK)
R306	1-216-864-11	METAL CHIP 0 5% 1/16W	
R308	1-216-837-11	METAL CHIP 22K 5% 1/16W	(EXCEPT TR57)
R309	1-216-847-11	METAL CHIP 150K 5% 1/16W	(EXCEPT TR57)
R310	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R311	1-216-805-11	METAL CHIP 47 5% 1/16W	(EXCEPT TR57)
R312	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR57/TR67/TR413PK)
R315	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR57/TR67/TR413PK)
R321	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR917/TR940/TR940PK)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R322	1-216-864-11	METAL CHIP 0 5% 1/16W	
R323	1-216-864-11	METAL CHIP 0 5% 1/16W	
R324	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR917/TR940/TR940PK)
R325	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R326	1-216-817-11	METAL CHIP 470 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R327	1-216-841-11	METAL CHIP 47K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R328	1-216-841-11	METAL CHIP 47K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R329	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R330	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R331	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R332	1-216-803-11	METAL CHIP 33 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R333	1-216-838-11	METAL CHIP 27K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R334	1-216-838-11	METAL CHIP 27K 5% 1/16W	(EXCEPT TR917/TR940/TR940PK)
R335	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R336	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TR917/TR940/TR940PK)
R337	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR917/TR940/TR940PK)
R338	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR917/TR940/TR940PK)
R339	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR917/TR940/TR940PK)
R340	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR917/TR940/TR940PK)
R341	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR917/TR940/TR940PK)
R342	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR917/TR940/TR940PK)
R343	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR917/TR940/TR940PK)
R344	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR917/TR940/TR940PK)
R345	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR917/TR940/TR940PK)
R346	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR917/TR940/TR940PK)
R347	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR917/TR940/TR940PK)
R348	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR917/TR940/TR940PK)
R349	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR917/TR940/TR940PK)
R350	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR917/TR940/TR940PK)
R351	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R352	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R353	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R354	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR917/TR940/TR940PK)
R355	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR917/TR940/TR940PK)
R356	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR917/TR940/TR940PK)
R357	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR917/TR940/TR940PK)
R358	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R359	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR917/TR940/TR940PK)
R360	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR917/TR940/TR940PK)
R361	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR917/TR940/TR940PK)
R362	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR917/TR940/TR940PK)
R363	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TR917/TR940/TR940PK)
R364	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R365	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TR917/TR940/TR940PK)
R366	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR917/TR940/TR940PK)
R367	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR917/TR940/TR940PK)
R368	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR917/TR940/TR940PK)
		< SWITCH >	
S301	1-692-605-11	SWITCH, SLIDE (LIGHT (ON/AUTO/OFF)	(EXCEPT TR57)
S302	1-771-040-21	SWITCH, PUSH (POWER (PLAYER/VTR))	
S303	1-771-039-11	SWITCH, PUSH (POWER (CAMERA))	

Ref. No.	Part No.	Description	Remark
	A-7073-422-A	PJ-81(M) BOARD, COMPLETE **************************	(EXCEPT TR917/TR940/TR940PK)
	A-7073-426-A	PJ-81(H) BOARD, COMPLETE **************************	(TR917/TR940/TR940PK) (Ref. No. 3,000 Series)
		< CAPACITOR >	
C101	1-110-569-11	TANTAL. CHIP 47uF 20% 6.3V	
		< CONNECTOR >	
* CN101	1-764-521-11	CONNECTOR, FFC/FPC (ZIF) 12P	
		< DIODE >	
D101	8-719-059-57	DIODE MAZJ082DFLSO	(TR917/TR940/TR940PK)
D102	8-719-059-57	DIODE MAZJ082DFLSO	
D103	8-719-059-57	DIODE MAZJ082DFLSO	
D104	8-719-420-14	DIODE MA8082-TX	(TR917/TR940/TR940PK)

Ref. No.	Part No.	Description	Remark
D105	8-719-059-57	DIODE MAZJ082DFLSO	
			(TR917/TR940/TR940PK)
D106	8-719-059-57	DIODE MAZJ082DFLSO	
			(TR917/TR940/TR940PK)
		< JACK >	
J101	1-537-747-21	TERMINAL BOARD	
		(S VIDEO, VIDEO, AUDIO, RFU DC OUT)	
			(TR917/TR940/TR940PK)
J101	1-537-747-41	TERMINAL BOARD	
		(VIDEO, AUDIO, RFU, DC OUT)	
			(EXCEPT TR917/TR940/TR940PK)
		< COIL >	
L101	1-414-072-11	INDUCTOR 1uH	
L102	1-216-295-91	SHORT 0	
L103	1-216-295-91	SHORT 0 (TR917/TR940/TR940PK)	
L104	1-216-295-91	SHORT 0 (TR917/TR940/TR940PK)	
		< TRANSISTOR >	
Q101	8-729-101-07	TRANSISTOR 2SB798-T1-DLDK	
Q102	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R101	1-216-864-11	METAL CHIP 0 5%	1/16W
R102	1-216-138-00	METAL CHIP 3.3 5%	1/8W
R103	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R104	1-216-820-11	METAL CHIP 820 5%	1/16W
R105	1-216-836-11	METAL CHIP 18K 5%	1/16W
R106	1-216-864-11	METAL CHIP 0 5%	1/16W
			(TR917/TR940/TR940PK)
R107	1-216-864-11	METAL CHIP 0 5%	1/16W
			(TR917/TR940/TR940PK)
R108	1-216-821-11	METAL CHIP 1K 5%	1/16W
			(TR917/TR940/TR940PK)
R109	1-216-821-11	METAL CHIP 1K 5%	1/16W

Ref. No.	Part No.	Description	Remark
	A-7073-423-A	SE-65(MM) BOARD, COMPLETE	
		***************************	
			(TR87/TR414PK)
	A-7073-427-A	SE-65(H) BOARD, COMPLETE	
		*************************	
			(TR917/TR940/TR940PK)
			(Ref. No. 3,000 Series)
		< CAPACITOR >	
C451	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C452	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C453	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C454	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C457	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C458	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C459	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C460	1-110-666-11	ELECT CHIP 22uF 20%	6.3V
C461	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C462	1-110-666-11	ELECT CHIP 22uF 20%	6.3V
C464	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V
C465	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C466	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
		< CONNECTOR >	
CN451	1-691-348-11	CONNECTOR, FFC/FPC (ZIF) 10P	
		< DIODE >	
D451	8-719-059-57	DIODE MAZJ082DFLSO	
			(TR917/TR940/TR940PK)
D452	8-719-059-57	DIODE MAZJ082DFLSO	
			(TR917/TR940/TR940PK)
		< IC >	
IC451	8-759-489-19	IC uPC6756GR-8JG-E2	
		< JACK >	
J451	1-695-514-21	JACK (SMALL TYPE) 1P (🎧)	
			(TR917/TR940/TR940PK)
		< COIL >	
L451	1-414-754-11	INDUCTOR 10uH	
L453	1-216-295-91	SHORT 0 (TR917/TR940/TR940PK)	
L454	1-216-295-91	SHORT 0 (TR917/TR940/TR940PK)	
		< RESISTOR >	
R451	1-216-837-11	METAL CHIP 22K 5%	1/16W
R452	1-216-837-11	METAL CHIP 22K 5%	1/16W
R453	1-216-837-11	METAL CHIP 22K 5%	1/16W
R454	1-216-837-11	METAL CHIP 22K 5%	1/16W
R455	1-216-864-11	METAL CHIP 0 5%	1/16W
R456	1-216-857-11	METAL CHIP 1M 5%	1/16W
R458	1-216-833-11	METAL CHIP 10K 5%	1/16W
R459	1-216-857-11	METAL CHIP 1M 5%	1/16W
R461	1-216-835-11	METAL CHIP 15K 5%	1/16W
R463	1-216-809-11	METAL CHIP 100 5%	1/16W
		< SENSOR >	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	

Ref. No.	Part No.	Description	Remark
	A-7093-437-A	VC-195 (HCIB0U) BOARD, COMPLETE	
		********************************	
			(TR917/TR940/TR940PK)
	A-7093-439-A	VC-195 (7MMCIBU) BOARD, COMPLETE	
		**********************************	
			(TR87/TR414PK)
	A-7093-440-A	VC-195 (7ZCBU) BOARD, COMPLETE	
		********************************	
			(TR57/TR67/TR413PK)
			(Ref. No. 1,000 Series)
		< CAPACITOR >	
C001	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C004	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C006	1-104-752-11	TANTAL. CHIP 33uF 20%	6.3V
C007	1-104-752-11	TANTAL. CHIP 33uF 20%	6.3V

Ref. No.	Part No.	Description			Remark
C008	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C009	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C010	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C011	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C012	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C013	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C014	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C015	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C016	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C017	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C019	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C020	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TR917/TR940/TR940PK)
C021	1-164-156-11	CERAMIC CHIP	0.1uF	25V	
C022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C023	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C024	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C025	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TR917/TR940/TR940PK)
C026	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C027	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C028	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C029	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C030	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C031	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C032	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C033	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C034	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C035	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C036	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C037	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C038	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C039	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C040	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C041	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C042	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C043	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C048	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C049	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C050	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C053	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C055	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C058	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C059	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C060	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C061	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C062	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C065	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C068	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C069	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C070	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C071	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C072	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C073	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C074	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
					(TR917/TR940/TR940PK)
C075	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
					(TR917/TR940/TR940PK)
C075	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
					(EXCEPT TR917/TR940/TR940PK)
C076	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
					(TR917/TR940/TR940PK)
C078	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C079	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
					(TR917/TR940/TR940PK)
C080	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
					(TR917/TR940/TR940PK)
C080	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
					(EXCEPT TR917/TR940/TR940PK)
C081	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C082	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C083	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
					(EXCEPT TR917/TR940/TR940PK)
C083	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
					(TR917/TR940/TR940PK)
C085	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C086	1-115-156-11	CERAMIC CHIP	1uF		10V
C088	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
					(EXCEPT TR917/TR940/TR940PK)
C088	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
					(TR917/TR940/TR940PK)
C089	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
					(EXCEPT TR917/TR940/TR940PK)
C089	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
					(TR917/TR940/TR940PK)
C090	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C152	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C156	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C157	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TR917/TR940/TR940PK)
C158	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C159	1-164-346-11	CERAMIC CHIP	1uF		16V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C161	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C162	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
					(TR917/TR940/TR940PK)
C163	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C164	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C166	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C168	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
					(TR917/TR940/TR940PK)
C168	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
					(EXCEPT TR917/TR940/TR940PK)
C169	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C170	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C171	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR917/TR940/TR940PK)
C172	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
					(TR917/TR940/TR940PK)

Ref. No.	Part No.	Description				Remark
C173	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	(TR917/TR940/TR940PK)
C174	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	(TR917/TR940/TR940PK)
C175	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR917/TR940/TR940PK)
C177	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	(TR917/TR940/TR940PK)
C178	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR917/TR940/TR940PK)
C179	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	(TR917/TR940/TR940PK)
C180	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C181	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR917/TR940/TR940PK)
C182	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C183	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	(TR917/TR940/TR940PK)
C184	1-115-156-11	CERAMIC CHIP	1uF		10V	(TR917/TR940/TR940PK)
C184	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(EXCEPT TR917/TR940/TR940PK)
C185	1-126-246-11	ELECT CHIP	220uF	20%	4V	
C186	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(EXCEPT TR917/TR940/TR940PK)
C187	1-126-246-11	ELECT CHIP	220uF	20%	4V	(TR917/TR940/TR940PK)
C188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C190	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C191	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C192	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V	
C202	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C205	1-115-156-11	CERAMIC CHIP	1uF		10V	
C206	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C207	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V	
C209	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	(TR917/TR940/TR940PK)
C209	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(EXCEPT TR917/TR940/TR940PK)
C210	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	(TR917/TR940/TR940PK)
C211	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C212	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	
C217	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C218	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V	
C219	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C224	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C226	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C227	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C229	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C230	1-115-156-11	CERAMIC CHIP	1uF		10V	
C232	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C233	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C237	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C239	1-115-156-11	CERAMIC CHIP	1uF		10V	
C243	1-115-156-11	CERAMIC CHIP	1uF		10V	(TR917/TR940/TR940PK)
C244	1-115-156-11	CERAMIC CHIP	1uF		10V	(TR917/TR940/TR940PK)
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C246	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C247	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C301	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C302	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	(TR917/TR940/TR940PK)
C307	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V	
C308	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C309	1-135-318-11	TANTAL. CHIP	33uF	20%	4V	
C310	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
C312	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V	
C313	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	(TR917/TR940/TR940PK)
C316	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C317	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	(TR917/TR940/TR940PK)
C318	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
C319	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C320	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C321	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	(TR917/TR940/TR940PK)
C322	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V	
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR917/TR940/TR940PK)
C324	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR917/TR940/TR940PK)
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(EXCEPT TR917/TR940/TR940PK)
C326	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR917/TR940/TR940PK)
C328	1-164-232-11	CERAMIC CHIP	0.01uF	50V		
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR917/TR940/TR940PK)
C330	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR917/TR940/TR940PK)
C331	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	(TR917/TR940/TR940PK)
C332	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C333	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C334	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	(TR917/TR940/TR940PK)
C335	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C336	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR917/TR940/TR940PK)
C337	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C338	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C339	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR917/TR940/TR940PK)
C340	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C341	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR917/TR940/TR940PK)
C342	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR917/TR940/TR940PK)

Ref. No.	Part No.	Description			Remark
C346	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C371	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
					(TR917/TR940/TR940PK)
C372	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C402	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C405	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C411	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C412	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C414	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C415	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C416	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C417	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C418	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C419	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C451	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C452	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C453	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C454	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C455	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C456	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C457	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C458	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C459	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C460	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C461	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C462	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C463	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C464	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C465	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C467	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C468	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C469	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C470	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C471	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C472	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C473	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C474	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C475	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C476	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C478	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C480	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C483	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C484	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C485	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C486	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C487	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C488	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C489	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C501	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C504	1-162-922-11	CERAMIC CHIP	39PF	5%	50V

Ref. No.	Part No.	Description			Remark
C506	1-115-156-11	CERAMIC CHIP	1uF		10V
C507	1-115-156-11	CERAMIC CHIP	1uF		10V
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C509	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C510	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C511	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C512	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C513	1-115-156-11	CERAMIC CHIP	1uF		10V
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C516	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C517	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C518	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C522	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C523	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C524	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C526	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C527	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C528	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C529	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C530	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C531	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C532	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
					(TR917/TR940/TR940PK)
C533	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
					(TR917/TR940/TR940PK)
C552	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C553	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C554	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C555	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C556	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C557	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C558	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C559	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C560	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C561	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C562	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C563	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C564	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C565	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C566	1-115-156-11	CERAMIC CHIP	1uF		10V
C567	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C569	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C570	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C571	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C572	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C610	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-119-749-91	TANTAL. CHIP	33uF	20%	4V
C613	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C615	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C617	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description	Remark
C618	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C619	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C620	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C621	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C622	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C623	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C624	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C625	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C626	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C627	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C628	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C629	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C630	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C634	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TR917/TR940/TR940PK)
C636	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C637	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C751	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	(EXCEPT TR57/TR67/TR413PK)
C752	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(EXCEPT TR57/TR67/TR413PK)
C753	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C754	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C755	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C756	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C757	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	(EXCEPT TR57/TR67/TR413PK)
C758	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(EXCEPT TR57/TR67/TR413PK)
C759	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C760	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	(EXCEPT TR57/TR67/TR413PK)
C761	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C762	1-164-668-11	CERAMIC CHIP 510PF 5% 50V	(EXCEPT TR57/TR67/TR413PK)
C763	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C764	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(EXCEPT TR57/TR67/TR413PK)
C765	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C766	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(EXCEPT TR57/TR67/TR413PK)
C767	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C768	1-162-909-11	CERAMIC CHIP 4PF 0.25PF 50V	(EXCEPT TR57/TR67/TR413PK)
C769	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C770	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C771	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(EXCEPT TR57/TR67/TR413PK)
C772	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(EXCEPT TR57/TR67/TR413PK)
C773	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(EXCEPT TR57/TR67/TR413PK)
C774	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(EXCEPT TR57/TR67/TR413PK)
C775	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR57/TR67/TR413PK)
C776	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C777	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C778	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR57/TR67/TR413PK)
C781	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	(EXCEPT TR57/TR67/TR413PK)
		< CONNECTOR >	
CN001	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
CN501	1-779-332-11	CONNECTOR, FFC/FPC 16P	
CN551	1-691-361-11	CONNECTOR, FFC/FPC (ZIF) 23P	
CN901	1-766-644-21	CONNECTOR, FFC/FPC 8P	
CN902	1-766-673-21	CONNECTOR, FFC/FPC 12P	
CN903	1-766-353-21	CONNECTOR, FFC/FPC 23P	
CN904	1-691-374-11	CONNECTOR, FFC/FPC 10P	
CN905	1-766-646-21	CONNECTOR, FFC/FPC 10P	
CN906	1-766-673-21	CONNECTOR, FFC/FPC 12P	
CN907	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN908	1-766-345-21	CONNECTOR, FFC/FPC 15P	
CN909	1-766-621-21	CONNECTOR, FFC/FPC 10P	
CN910	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN911	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P	
CN912	1-766-677-21	CONNECTOR, FFC/FPC 16P	
CN914	1-691-542-21	CONNECTOR, BOARD TO BOARD 48P	
		< DIODE >	
D002	8-719-404-49	DIODE MA111-TX	(TR917/TR940/TR940PK)
D201	8-719-055-86	DIODE KV1470TL1-3	
D202	8-719-055-86	DIODE KV1470TL1-3	
D502	8-713-102-28	DIODE 1T379-04-T8A	
D551	8-719-404-49	DIODE MA111-TX	
D601	8-719-421-27	DIODE MA728-TX	
D602	8-719-421-27	DIODE MA728-TX	
D604	8-719-404-49	DIODE MA111-TX	
D608	8-719-404-49	DIODE MA111-TX	
D609	8-719-049-09	DIODE 1SS367-T3SONY	
D610	8-719-421-27	DIODE MA728-TX	
D910	8-719-059-57	DIODE MAZJ082DFLSO	
D911	8-719-420-14	DIODE MA8082-TX	
		< FERRITE BEAD >	
FB001	1-414-229-11	INDUCTOR CHIP 0UH	
FB002	1-414-229-11	INDUCTOR CHIP 0UH	
FB003	1-414-229-11	INDUCTOR CHIP 0UH	
FB004	1-414-229-11	INDUCTOR CHIP 0UH	
FB151	1-414-228-11	INDUCTOR CHIP 0UH	
FB152	1-414-921-11	INDUCTOR CHIP 0UH	
FB201	1-414-228-11	INDUCTOR CHIP 0UH	
FB202	1-414-228-11	INDUCTOR CHIP 0UH	
FB203	1-414-228-11	INDUCTOR CHIP 0UH	

Ref. No.	Part No.	Description	Remark
FB204	1-414-228-11	INDUCTOR CHIP 0UH	(TR917/TR940/TR940PK)
FB205	1-414-228-11	INDUCTOR CHIP 0UH	(TR917/TR940/TR940PK)
FB206	1-414-228-11	INDUCTOR CHIP 0UH	
FB501	1-414-228-11	INDUCTOR CHIP 0UH	
FB503	1-500-284-21	INDUCTOR CHIP 0UH	
FB504	1-500-284-21	INDUCTOR CHIP 0UH	
FB505	1-500-284-21	INDUCTOR CHIP 0UH (TR57/TR67/TR413PK)	
FB506	1-414-228-11	INDUCTOR CHIP 0UH	
		< IC >	
IC001	8-752-079-46	IC CXA2084R-T6	
IC151	8-752-078-82	IC CXA2030R-T6 (TR917/TR940/TR940PK)	
IC151	8-759-357-63	IC AN2220FH-EB	(EXCEPT TR917/TR940/TR940PK)
IC152	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC201	8-759-494-73	IC MB90097PFV-G-104-ER	
IC202	8-759-494-55	IC MB87F126PFF-G-BND	
IC204	8-752-390-52	IC CXD3124R-T6 (TR917/TR940/TR940PK)	
IC301	8-759-494-29	IC AN2982FH-EB (TR917/TR940/TR940PK)	
IC301	8-759-494-30	IC AN2984FH-EB	(EXCEPT TR917/TR940/TR940PK)
IC401	8-759-445-94	IC AK6480AM-E2	
IC402	8-759-529-06	IC MB91191PFV-G-106-ER	
IC451	8-759-327-67	IC LB1950V-TLM	
IC452	8-759-327-61	IC LB8112V-TLM	
IC501	8-752-384-70	IC CXD2486R-T4	
IC502	8-759-462-43	IC AD9800JCSTRL	
IC551	8-759-444-87	IC NJM324V(TE2)	
IC552	8-759-351-46	IC MPC17A34RVMEL	
IC602	8-759-424-79	IC S-8423YFS-T2	
IC603	8-759-059-05	IC TL1596CPW-ELM1000	
IC604	8-759-527-99	IC S579212PZ-TEB	
IC751	8-759-498-52	IC LA9511W-TBM	(EXCEPT TR57/TR67/TR413PK)
		< COIL >	
L001	1-414-406-11	INDUCTOR 220uH	
L002	1-412-952-11	INDUCTOR 12uH	
L003	1-414-406-11	INDUCTOR 220uH	
L004	1-414-754-11	INDUCTOR 10uH	
L005	1-412-948-11	INDUCTOR 5.6uH	
L006	1-412-963-11	INDUCTOR 100uH	
L008	1-412-280-31	INDUCTOR 330uH	
L009	1-410-656-11	INDUCTOR CHIP 150uH	
L010	1-410-657-21	INDUCTOR CHIP 180uH	
L011	1-412-956-21	INDUCTOR 27uH (TR917/TR940/TR940PK)	
L012	1-412-955-11	INDUCTOR 22uH	
L013	1-412-944-11	INDUCTOR 2.7uH	
L015	1-412-951-11	INDUCTOR 10uH	
L016	1-412-946-11	INDUCTOR 3.9uH	
L017	1-414-754-11	INDUCTOR 10uH	
L018	1-410-656-11	INDUCTOR CHIP 150uH	
L019	1-412-957-11	INDUCTOR 33uH	
L152	1-412-939-11	INDUCTOR 1uH (TR917/TR940/TR940PK)	
L153	1-414-754-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark
L154	1-414-754-11	INDUCTOR 10uH	
L155	1-414-754-11	INDUCTOR 10uH	
L156	1-414-754-11	INDUCTOR 10uH	
L201	1-414-754-11	INDUCTOR 10uH	
L202	1-414-754-11	INDUCTOR 10uH	
L203	1-414-754-11	INDUCTOR 10uH	
L204	1-410-658-31	INDUCTOR CHIP 220uH	
L205	1-412-955-11	INDUCTOR 22uH (TR917/TR940/TR940PK)	
L205	1-412-957-11	INDUCTOR 33uH	(EXCEPT TR917/TR940/TR940PK)
L206	1-412-945-11	INDUCTOR 3.3uH	
L207	1-414-754-11	INDUCTOR 10uH	
L209	1-414-754-11	INDUCTOR 10uH	
L402	1-414-754-11	INDUCTOR 10uH	
L501	1-414-398-11	INDUCTOR 10uH	
L502	1-216-295-91	SHORT 0 (EXCEPT TR917/TR940/TR940PK)	
L502	1-412-955-11	INDUCTOR 22uH (TR917/TR940/TR940PK)	
L552	1-414-398-11	INDUCTOR 10uH	
L553	1-414-754-11	INDUCTOR 10uH	
L555	1-414-754-11	INDUCTOR 10uH	
L602	1-414-754-11	INDUCTOR 10uH	
L751	1-412-948-11	INDUCTOR 5.6uH	(EXCEPT TR57/TR67/TR413PK)
L752	1-412-957-11	INDUCTOR 33uH	(EXCEPT TR57/TR67/TR413PK)
L753	1-412-957-11	INDUCTOR 33uH	(EXCEPT TR57/TR67/TR413PK)
		< TRANSISTOR >	
Q001	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q002	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q003	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q004	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR917/TR940/TR940PK)
Q005	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR917/TR940/TR940PK)
Q006	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR917/TR940/TR940PK)
Q007	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR917/TR940/TR940PK)
Q008	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR917/TR940/TR940PK)
Q009	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR917/TR940/TR940PK)
Q010	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR917/TR940/TR940PK)
Q011	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR917/TR940/TR940PK)
Q012	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q017	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q019	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q020	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q021	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q022	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	(TR917/TR940/TR940PK)
Q023	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q024	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q025	8-729-043-40	TRANSISTOR 2SC4627J-C(K8).S0	(TR917/TR940/TR940PK)

Ref. No.	Part No.	Description	Remark
Q026	8-729-031-69	TRANSISTOR 2SA1965-TL	
			(TR917/TR940/TR940PK)
Q027	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q028	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q029	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q030	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
			(TR917/TR940/TR940PK)
Q032	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q033	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q034	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q036	8-729-043-40	TRANSISTOR 2SC4627J-C(K8).	
Q038	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q039	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q040	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q041	8-729-230-72	TRANSISTOR 2SA1362(YG)EL	
Q042	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q043	8-729-031-69	TRANSISTOR 2SA1965-TL	
			(TR917/TR940/TR940PK)
Q044	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(TR917/TR940/TR940PK)
Q151	8-729-037-61	TRANSISTOR UN9113J-(K8).SO	
Q153	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	
Q154	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	
			(TR917/TR940/TR940PK)
Q156	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	
			(TR917/TR940/TR940PK)
Q202	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q203	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q204	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q205	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q208	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(TR917/TR940/TR940PK)
Q213	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q214	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q215	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q216	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q217	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q218	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q301	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
			(TR917/TR940/TR940PK)
Q302	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
Q305	8-729-042-61	TRANSISTOR UN9115J-(K8).SO	
Q306	8-729-042-73	TRANSISTOR UN9215J-(K8).SO	
Q307	8-729-042-73	TRANSISTOR UN9215J-(K8).SO	
			(TR917/TR940/TR940PK)
Q308	8-729-037-61	TRANSISTOR UN9113J-(K8).SO	
Q309	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q310	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(TR917/TR940/TR940PK)
Q371	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
Q372	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
			(TR917/TR940/TR940PK)
Q452	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q453	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q454	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q455	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q456	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q501	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q551	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q552	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q553	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q607	8-729-041-43	TRANSISTOR HN1L02FU(TE85R)	
Q609	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
			(EXCEPT TR57/TR67/TR413PK)
Q610	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q611	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
			(EXCEPT TR57/TR67/TR413PK)
Q619	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
			(TR917/TR940/TR940PK)
Q620	8-729-042-58	TRANSISTOR UN9111J-(K8).SO	
		< RESISTOR >	
R001	1-216-864-11	METAL CHIP 0 5% 1/16W	
			(TR57/TR67/TR87/TR413PK/TR414PK)
R002	1-216-864-11	METAL CHIP 0 5% 1/16W	
			(TR57/TR67/TR87/TR413PK/TR414PK)
R003	1-216-806-11	RES,CHIP 56 5% 1/16W	
R004	1-216-818-11	METAL CHIP 560 5% 1/16W	
R005	1-216-809-11	METAL CHIP 100 5% 1/16W	
R006	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R007	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R008	1-216-814-11	METAL CHIP 270 5% 1/16W	
R009	1-216-813-11	METAL CHIP 220 5% 1/16W	
R010	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
			(TR917/TR940/TR940PK)
R011	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
			(TR917/TR940/TR940PK)
R012	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
			(TR917/TR940/TR940PK)
R013	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
			(TR917/TR940/TR940PK)
R014	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R015	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R016	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
			(TR917/TR940/TR940PK)
R017	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
			(TR917/TR940/TR940PK)
R018	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
			(TR917/TR940/TR940PK)
R019	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
			(TR917/TR940/TR940PK)
R020	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R021	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R023	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R025	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R026	1-216-816-11	METAL CHIP 390 5% 1/16W	
R027	1-216-816-11	METAL CHIP 390 5% 1/16W	
R029	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R032	1-216-816-11	METAL CHIP 390 5% 1/16W	
R033	1-216-816-11	METAL CHIP 390 5% 1/16W	
R034	1-216-864-11	METAL CHIP 0 5% 1/16W	
R035	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R037	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R038	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R039	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R040	1-216-864-11	METAL CHIP 0 5% 1/16W	

Ref. No.	Part No.	Description				Remark
R043	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR917/TR940/TR940PK)
R045	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R046	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R047	1-216-864-11	METAL CHIP	0	5%	1/16W	
R048	1-216-864-11	METAL CHIP	0	5%	1/16W	
R049	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R050	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R051	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R052	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R055	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R056	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R057	1-216-819-11	METAL CHIP	680	5%	1/16W	(TR917/TR940/TR940PK)
R057	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR57/TR67/TR87/TR413PK/TR414PK)
R058	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R059	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R060	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R061	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-817-11	METAL CHIP	470	5%	1/16W	(TR917/TR940/TR940PK)
R063	1-216-818-11	METAL CHIP	560	5%	1/16W	(TR57/TR67/TR87/TR413PK/TR414PK)
R064	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	(TR917/TR940/TR940PK)
R064	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR57/TR67/TR87/TR413PK/TR414PK)
R065	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR917/TR940/TR940PK)
R066	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R067	1-216-817-11	METAL CHIP	470	5%	1/16W	
R068	1-216-817-11	METAL CHIP	470	5%	1/16W	
R069	1-216-864-11	METAL CHIP	0	5%	1/16W	
R072	1-216-864-11	METAL CHIP	0	5%	1/16W	
R073	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R074	1-216-816-11	METAL CHIP	390	5%	1/16W	
R075	1-216-817-11	METAL CHIP	470	5%	1/16W	
R076	1-216-816-11	METAL CHIP	390	5%	1/16W	
R077	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR57/TR67/TR87/TR413PK/TR414PK)
R078	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR917/TR940/TR940PK)
R079	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR917/TR940/TR940PK)
R080	1-216-813-11	METAL CHIP	220	5%	1/16W	(TR917/TR940/TR940PK)
R081	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R082	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R083	1-216-820-11	METAL CHIP	820	5%	1/16W	(TR917/TR940/TR940PK)
R084	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR917/TR940/TR940PK)
R085	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R087	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR917/TR940/TR940PK)
R088	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR917/TR940/TR940PK)
R092	1-216-809-11	METAL CHIP	100	5%	1/16W	
R093	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R094	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR917/TR940/TR940PK)
R095	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R096	1-216-813-11	METAL CHIP	220	5%	1/16W	
R098	1-216-817-11	METAL CHIP	470	5%	1/16W	
R099	1-216-817-11	METAL CHIP	470	5%	1/16W	
R101	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R102	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R103	1-216-816-11	METAL CHIP	390	5%	1/16W	
R104	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	(TR917/TR940/TR940PK)
R105	1-216-814-11	METAL CHIP	270	5%	1/16W	(EXCEPT TR917/TR940/TR940PK)
R105	1-216-819-11	METAL CHIP	680	5%	1/16W	(TR917/TR940/TR940PK)
R106	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R109	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R110	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R112	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R113	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R152	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R154	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	(TR917/TR940/TR940PK)
R157	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	(TR917/TR940/TR940PK)
R161	1-216-804-11	METAL CHIP	39	5%	1/16W	(TR917/TR940/TR940PK)
R162	1-216-803-11	METAL CHIP	33	5%	1/16W	(TR917/TR940/TR940PK)
R165	1-216-803-11	METAL CHIP	33	5%	1/16W	(TR917/TR940/TR940PK)
R166	1-216-804-11	METAL CHIP	39	5%	1/16W	(TR917/TR940/TR940PK)
R167	1-216-803-11	METAL CHIP	33	5%	1/16W	
R170	1-216-804-11	METAL CHIP	39	5%	1/16W	
R175	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R176	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TR917/TR940/TR940PK)
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R178	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR917/TR940/TR940PK)
R179	1-216-815-11	METAL CHIP	330	5%	1/16W	
R180	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR917/TR940/TR940PK)
R183	1-218-876-11	RES,CHIP	16K	0.50%	1/16W	
R184	1-218-847-11	RES,CHIP	1K	0.50%	1/16W	
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R203	1-216-814-11	METAL CHIP	270	5%	1/16W	
R205	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R206	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R208	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R210	1-216-809-11	METAL CHIP	100	5%	1/16W	
R211	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R212	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R214	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R215	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R216	1-216-811-11	METAL CHIP	150	5%	1/16W	

Ref. No.	Part No.	Description			Remark
R217	1-216-864-11	METAL CHIP	0	5%	1/16W
		(EXCEPT TR917/TR940/TR940PK)			
R218	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R219	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R220	1-216-815-11	METAL CHIP	330	5%	1/16W
R222	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W
R224	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R225	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R226	1-216-820-11	METAL CHIP	820	5%	1/16W
R227	1-216-811-11	METAL CHIP	150	5%	1/16W
R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R229	1-216-805-11	METAL CHIP	47	5%	1/16W
R230	1-216-812-11	METAL CHIP	180	5%	1/16W
R231	1-216-812-11	METAL CHIP	180	5%	1/16W
R232	1-216-815-11	METAL CHIP	330	5%	1/16W
R233	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R234	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R236	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R237	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R238	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R239	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R240	1-216-857-11	METAL CHIP	1M	5%	1/16W
R241	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R242	1-216-845-11	METAL CHIP	100K	5%	1/16W
R243	1-216-845-11	METAL CHIP	100K	5%	1/16W
R244	1-216-845-11	METAL CHIP	100K	5%	1/16W
R245	1-216-840-11	METAL CHIP	39K	5%	1/16W
R246	1-216-835-11	METAL CHIP	15K	5%	1/16W
R247	1-216-817-11	METAL CHIP	470	5%	1/16W
R248	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R249	1-216-833-11	METAL CHIP	10K	5%	1/16W
R250	1-216-295-91	SHORT 0 (TR917/TR940/TR940PK)			
R251	1-216-833-11	METAL CHIP	10K	5%	1/16W
R252	1-216-821-11	METAL CHIP	1K	5%	1/16W
R253	1-216-845-11	METAL CHIP	100K	5%	1/16W
R254	1-216-864-11	METAL CHIP	0	5%	1/16W
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W
R256	1-216-845-11	METAL CHIP	100K	5%	1/16W
R257	1-216-295-91	SHORT	0		
R302	1-216-817-11	METAL CHIP	470	5%	1/16W
		(TR917/TR940/TR940PK)			
R303	1-216-817-11	METAL CHIP	470	5%	1/16W
R304	1-216-817-11	METAL CHIP	470	5%	1/16W
R305	1-216-817-11	METAL CHIP	470	5%	1/16W
		(TR917/TR940/TR940PK)			
R308	1-216-864-11	METAL CHIP	0	5%	1/16W
		(EXCEPT TR917/TR940/TR940PK)			
R311	1-216-841-11	METAL CHIP	47K	5%	1/16W
R313	1-216-864-11	METAL CHIP	0	5%	1/16W
R314	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R315	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
		(TR917/TR940/TR940PK)			
R316	1-216-841-11	METAL CHIP	47K	5%	1/16W
		(TR917/TR940/TR940PK)			
R317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R318	1-216-845-11	METAL CHIP	100K	5%	1/16W
R319	1-216-845-11	METAL CHIP	100K	5%	1/16W
		(TR917/TR940/TR940PK)			
R320	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(TR917/TR940/TR940PK)			
R321	1-216-843-11	METAL CHIP	68K	5%	1/16W
R322	1-216-845-11	METAL CHI	100K	5%	1/16W
		(EXCEPT TR917/TR940/TR940PK)			
R322	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(TR917/TR940/TR940PK)			
R323	1-216-837-11	METAL CHIP	22K	5%	1/16W
R325	1-216-849-11	METAL CHIP	220K	5%	1/16W
		(EXCEPT TR917/TR940/TR940PK)			
R325	1-216-851-11	METAL CHIP	330K	5%	1/16W
		(TR917/TR940/TR940PK)			
R331	1-216-864-11	METAL CHIP	0	5%	1/16W
R343	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TR917/TR940/TR940PK)			
R373	1-216-809-11	METAL CHIP	100	5%	1/16W
		(TR917/TR940/TR940PK)			
R374	1-216-809-11	METAL CHIP	100	5%	1/16W
R388	1-216-864-11	METAL CHIP	0	5%	1/16W
R389	1-216-864-11	METAL CHIP	0	5%	1/16W
R402	1-216-821-11	METAL CHIP	1K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W
R407	1-216-845-11	METAL CHIP	100K	5%	1/16W
R409	1-216-845-11	METAL CHIP	100K	5%	1/16W
R410	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R412	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R414	1-216-864-11	METAL CHIP	0	5%	1/16W
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W
R417	1-216-821-11	METAL CHIP	1K	5%	1/16W
R418	1-216-821-11	METAL CHIP	1K	5%	1/16W
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W
R425	1-216-853-11	METAL CHIP	470K	5%	1/16W
R426	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R427	1-216-841-11	METAL CHIP	47K	5%	1/16W
R428	1-216-841-11	METAL CHIP	47K	5%	1/16W
R429	1-216-811-11	METAL CHIP	150	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W
R431	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R432	1-216-845-11	METAL CHIP	100K	5%	1/16W
R433	1-216-845-11	METAL CHIP	100K	5%	1/16W
R434	1-216-853-11	METAL CHIP	470K	5%	1/16W
R435	1-216-853-11	METAL CHIP	470K	5%	1/16W
R440	1-216-841-11	METAL CHIP	47K	5%	1/16W
R441	1-216-845-11	METAL CHIP	100K	5%	1/16W
R452	1-217-671-11	METAL CHIP	1	5%	1/10W
R453	1-217-671-11	METAL CHIP	1	5%	1/10W
R454	1-217-671-11	METAL CHIP	1	5%	1/10W
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
R458	1-216-808-11	METAL CHIP	82	5%	1/16W
R459	1-216-864-11	METAL CHIP	0	5%	1/16W
R460	1-216-864-11	METAL CHIP	0	5%	1/16W
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W
R462	1-216-853-11	METAL CHIP	470K	5%	1/16W
R463	1-216-853-11	METAL CHIP	470K	5%	1/16W
R464	1-216-851-11	METAL CHIP	330K	5%	1/16W
R465	1-216-845-11	METAL CHIP	100K	5%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-833-11	METAL CHIP	10K	5%	1/16W
R469	1-216-841-11	METAL CHIP	47K	5%	1/16W
R470	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R473	1-216-841-11	METAL CHIP	47K	5%	1/16W
R474	1-216-817-11	METAL CHIP	470	5%	1/16W
R475	1-216-838-11	METAL CHIP	27K	5%	1/16W
R476	1-216-817-11	METAL CHIP	470	5%	1/16W
R477	1-216-864-11	METAL CHIP	0	5%	1/16W
R479	1-216-864-11	METAL CHIP	0	5%	1/16W
R480	1-216-864-11	METAL CHIP	0	5%	1/16W
R481	1-216-864-11	METAL CHIP	0	5%	1/16W
R482	1-216-833-11	METAL CHIP	10K	5%	1/16W
R483	1-216-836-11	METAL CHIP	18K	5%	1/16W
R484	1-217-671-11	METAL CHIP	1	5%	1/10W
R485	1-217-671-11	METAL CHIP	1	5%	1/10W
R486	1-216-845-11	METAL CHIP	100K	5%	1/16W
R487	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R488	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R490	1-216-023-00	METAL CHIP	82	5%	1/10W
R502	1-216-798-11	RES,CHIP	12	5%	1/16W
R503	1-216-798-11	RES,CHIP	12	5%	1/16W
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W
R505	1-216-864-11	METAL CHIP	0	5%	1/16W
R506	1-216-857-11	METAL CHIP	1M	5%	1/16W
R508	1-216-809-11	METAL CHIP	100	5%	1/16W
R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R511	1-216-809-11	METAL CHIP	100	5%	1/16W
					(TR57/TR67/TR413PK)
R512	1-216-853-11	METAL CHIP	470K	5%	1/16W
R513	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R522	1-216-864-11	METAL CHIP	0	5%	1/16W
R525	1-216-864-11	METAL CHIP	0	5%	1/16W
R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R527	1-216-864-11	METAL CHIP	0	5%	1/16W
					(EXCEPT TR57/TR67/TR413PK)
R529	1-216-864-11	METAL CHIP	0	5%	1/16W
R551	1-216-841-11	METAL CHIP	47K	5%	1/16W
R554	1-216-843-11	METAL CHIP	68K	5%	1/16W
R555	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R556	1-216-001-00	METAL CHIP	10	5%	1/10W

Ref. No.	Part No.	Description			Remark
R557	1-216-843-11	METAL CHIP	68K	5%	1/16W
R558	1-216-295-91	SHORT	0		
R560	1-216-821-11	METAL CHIP	1K	5%	1/16W
R561	1-216-853-11	METAL CHIP	470K	5%	1/16W
R562	1-216-849-11	METAL CHIP	220K	5%	1/16W
R563	1-216-853-11	METAL CHIP	470K	5%	1/16W
R564	1-216-853-11	METAL CHIP	470K	5%	1/16W
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W
R566	1-216-835-11	METAL CHIP	15K	5%	1/16W
R567	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R570	1-216-841-11	METAL CHIP	47K	5%	1/16W
R571	1-216-837-11	METAL CHIP	22K	5%	1/16W
R572	1-216-845-11	METAL CHIP	100K	5%	1/16W
R573	1-216-815-11	METAL CHIP	330	5%	1/16W
R574	1-216-821-11	METAL CHIP	1K	5%	1/16W
R575	1-216-821-11	METAL CHIP	1K	5%	1/16W
R576	1-216-821-11	METAL CHIP	1K	5%	1/16W
R577	1-216-833-11	METAL CHIP	10K	5%	1/16W
R579	1-216-821-11	METAL CHIP	1K	5%	1/16W
R582	1-216-864-11	METAL CHIP	0	5%	1/16W
R603	1-216-845-11	METAL CHIP	100K	5%	1/16W
R604	1-216-813-11	METAL CHIP	220	5%	1/16W
R606	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(EXCEPT TR57/TR67/TR413PK)
R608	1-216-845-11	METAL CHIP	100K	5%	1/16W
R611	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
					(EXCEPT TR57/TR67/TR413PK)
R612	1-216-853-11	METAL CHIP	470K	5%	1/16W
R614	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(EXCEPT TR57/TR67/TR413PK)
R618	1-216-853-11	METAL CHIP	470K	5%	1/16W
R619	1-216-853-11	METAL CHIP	470K	5%	1/16W
R620	1-216-853-11	METAL CHIP	470K	5%	1/16W
R621	1-216-853-11	METAL CHIP	470K	5%	1/16W
R622	1-216-853-11	METAL CHIP	470K	5%	1/16W
R624	1-216-853-11	METAL CHIP	470K	5%	1/16W
R625	1-216-845-11	METAL CHIP	100K	5%	1/16W
R627	1-216-853-11	METAL CHIP	470K	5%	1/16W
R628	1-216-841-11	METAL CHIP	47K	5%	1/16W
R629	1-216-833-11	METAL CHIP	10K	5%	1/16W
R630	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R631	1-216-845-11	METAL CHIP	100K	5%	1/16W
R632	1-216-857-11	METAL CHIP	1M	5%	1/16W
R633	1-216-853-11	METAL CHIP	470K	5%	1/16W
R634	1-216-853-11	METAL CHIP	470K	5%	1/16W
R635	1-216-857-11	METAL CHIP	1M	5%	1/16W
R636	1-216-857-11	METAL CHIP	1M	5%	1/16W
R637	1-216-845-11	METAL CHIP	100K	5%	1/16W
R638	1-216-845-11	METAL CHIP	100K	5%	1/16W
R639	1-216-845-11	METAL CHIP	100K	5%	1/16W
R640	1-216-845-11	METAL CHIP	100K	5%	1/16W
R641	1-216-845-11	METAL CHIP	100K	5%	1/16W
R642	1-216-821-11	METAL CHIP	1K	5%	1/16W
R643	1-216-857-11	METAL CHIP	1M	5%	1/16W
R644	1-216-841-11	METAL CHIP	47K	5%	1/16W
R645	1-216-845-11	METAL CHIP	100K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R646	1-216-853-11	METAL CHIP	470K	5%	1/16W
R647	1-216-853-11	METAL CHIP	470K	5%	1/16W
R648	1-216-853-11	METAL CHIP	470K	5%	1/16W
R649	1-216-857-11	METAL CHIP	1M	5%	1/16W
R650	1-219-570-11	RES,CHIP	10M	5%	1/16W
R651	1-216-845-11	METAL CHIP	100K	5%	1/16W
R652	1-216-853-11	METAL CHIP	470K	5%	1/16W
R653	1-216-853-11	METAL CHIP	470K	5%	1/16W
R654	1-216-817-11	METAL CHIP	470	5%	1/16W
R655	1-216-853-11	METAL CHIP	470K	5%	1/16W
R662	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR917/TR940/TR940PK)
R663	1-216-853-11	METAL CHIP	470K	5%	1/16W (TR917/TR940/TR940PK)
R665	1-216-853-11	METAL CHIP	470K	5%	1/16W (TR917/TR940/TR940PK)
R666	1-216-821-11	METAL CHIP	1K	5%	1/16W
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W
R668	1-216-821-11	METAL CHIP	1K	5%	1/16W
R669	1-216-821-11	METAL CHIP	1K	5%	1/16W
R670	1-216-821-11	METAL CHIP	1K	5%	1/16W
R671	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-821-11	METAL CHIP	1K	5%	1/16W
R673	1-216-821-11	METAL CHIP	1K	5%	1/16W
R675	1-216-821-11	METAL CHIP	1K	5%	1/16W
R676	1-216-821-11	METAL CHIP	1K	5%	1/16W
R677	1-216-821-11	METAL CHIP	1K	5%	1/16W
R678	1-216-821-11	METAL CHIP	1K	5%	1/16W
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W
R680	1-216-845-11	METAL CHIP	100K	5%	1/16W
R681	1-216-821-11	METAL CHIP	1K	5%	1/16W
R682	1-216-821-11	METAL CHIP	1K	5%	1/16W
R683	1-216-821-11	METAL CHIP	1K	5%	1/16W
R684	1-216-821-11	METAL CHIP	1K	5%	1/16W
R685	1-216-821-11	METAL CHIP	1K	5%	1/16W
R686	1-216-821-11	METAL CHIP	1K	5%	1/16W
R687	1-216-821-11	METAL CHIP	1K	5%	1/16W
R689	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT TR917/TR940/TR940PK)
R690	1-216-821-11	METAL CHIP	1K	5%	1/16W
R691	1-216-845-11	METAL CHIP	100K	5%	1/16W
R692	1-216-853-11	METAL CHIP	470K	5%	1/16W
R693	1-216-821-11	METAL CHIP	1K	5%	1/16W
R695	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R697	1-216-854-11	METAL CHIP	560K	5%	1/16W
R726	1-216-864-11	METAL CHIP	0	5%	1/16W
R752	1-216-841-11	METAL CHIP	47K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R753	1-216-841-11	METAL CHIP	47K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R755	1-216-837-11	METAL CHIP	22K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R756	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R757	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R758	1-216-833-11	METAL CHIP	10K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R759	1-216-833-11	METAL CHIP	10K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R760	1-216-835-11	METAL CHIP	15K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R761	1-216-857-11	METAL CHIP	1M	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R763	1-218-879-11	RES,CHIP	22K	0.50%	1/16W (EXCEPT TR57/TR67/TR413PK)
R764	1-216-815-11	METAL CHIP	330	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R765	1-216-821-11	METAL CHIP	1K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R767	1-216-817-11	METAL CHIP	470	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R768	1-216-847-11	METAL CHIP	150K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R770	1-216-847-11	METAL CHIP	150K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R771	1-216-818-11	METAL CHIP	560	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R772	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R773	1-216-817-11	METAL CHIP	470	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R774	1-216-840-11	METAL CHIP	39K	5%	1/16W (EXCEPT TR57/TR67/TR413PK)
R916	1-216-864-11	METAL CHIP	0	5%	1/16W
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W
R918	1-216-845-11	METAL CHIP	100K	5%	1/16W
R919	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR917/TR940/TR940PK)
R919	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR87/TR414PK)
R919	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR57/TR67/TR413PK)
R920	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR57/TR67/TR413PK)
R920	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR87/TR414PK)
R920	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR917/TR940/TR940PK)
R921	1-216-845-11	METAL CHIP	100K	5%	1/16W
R922	1-217-671-11	METAL CHIP	1	5%	1/10W
R923	1-217-671-11	METAL CHIP	1	5%	1/10W
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W
R925	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-864-11	METAL CHIP	0	5%	1/16W
R928	1-216-821-11	METAL CHIP	1K	5%	1/16W
R929	1-216-864-11	METAL CHIP	0	5%	1/16W

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X151	1-767-028-21	VIBRATOR, CRYSTAL (14.318182 MHz)	(TR917/TR940/TR940PK)
X401	1-760-655-41	VIBRATOR, CRYSTAL (20 MHz)	
X501	1-760-320-11	VIBRATOR, CRYSTAL (28.6363 MHz)	
X601	1-579-907-21	VIBRATOR, CERAMIC (20 MHz)	
X602	1-760-458-21	VIBRATOR, CRYSTAL (32.768 kHz)	

Ref. No.	Part No.	Description				Remark
	A-7073-437-A	VF-119 BOARD, COMPLETE				
		**********************				
		(Ref. No. 10,000 Series)				
		< CAPACITOR >				
C5401	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C5402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5403	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V	
C5404	1-164-156-11	CERAMIC CHIP	0.1uF	25V		
C5405	1-164-156-11	CERAMIC CHIP	0.1uF	25V		
C5406	1-164-156-11	CERAMIC CHIP	0.1uF	25V		
C5407	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C5408	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C5409	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C5410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5411	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C5413	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V	
C5414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5415	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C5416	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V	
C5417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5418	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V	
C5419	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	
C5420	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V	
C5421	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C5422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C5423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5424	1-165-112-11	CERAMIC CHIP	0.33uF		16V	
C5427	1-165-112-11	CERAMIC CHIP	0.33uF		16V	
C5429	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
		< CONNECTOR >				
CN5401	1-766-350-21	CONNECTOR, FFC/FPC 20P				
CN5402	1-691-380-21	CONNECTOR, FFC/FPC 16P				
		< DIODE >				
D5401	8-713-102-80	DIODE 1T369-01-T8A				
		< IC >				
IC5401	8-759-498-53	IC CXA8115R-T4				
IC5402	8-759-364-05	IC M62376GP-65AD				
IC5404	8-752-389-81	IC CXD2458R-T4				
		< COIL >				
L5401	1-412-951-11	INDUCTOR 10uH				
L5402	1-412-951-11	INDUCTOR 10uH				
L5403	1-412-959-11	INDUCTOR 47uH				
L5404	1-412-949-21	INDUCTOR 6.8uH				
L5405	1-412-959-11	INDUCTOR 47uH				
		< RESISTOR >				
R5401	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5403	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5405	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5408	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5409	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R5415	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5416	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5417	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5420	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R5421	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R5422	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R5423	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R5424	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R5425	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R5426	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R5429	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5431	1-216-809-11	METAL CHIP	100	5%	1/16W	
R5432	1-216-809-11	METAL CHIP	100	5%	1/16W	
R5433	1-218-877-11	RES,CHIP	18K	0.50%	1/16W	
R5434	1-218-873-11	RES,CHIP	12K	0.50%	1/16W	
R5435	1-216-809-11	METAL CHIP	100	5%	1/16W	
R5437	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5439	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5440	1-218-905-11	RES,CHIP	270K	0.50%	1/16W	
R5441	1-218-877-11	RES,CHIP	18K	0.50%	1/16W	
R5444	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R5446	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5447	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R5448	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R5449	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5452	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R5458	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5460	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5468	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5469	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5470	1-216-864-11	METAL CHIP	0	5%	1/16W	
R5471	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R5472	1-218-883-11	RES,CHIP	33K	0.50%	1/16W	

Ref. No.	Part No.	Description				Remark
	A-7073-438-A	VF-120 BOARD, COMPLETE				
		**********************				
		(Ref. No. 10,000 Series)				
		< CAPACITOR >				
C5302	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V	
C5303	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C5304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5305	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	
C5306	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V	
C5307	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C5308	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C5309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C5310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C5311	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C5312	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C5313	1-165-128-11	CERAMIC CHIP	0.22uF		16V	
C5314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
		< CONNECTOR >				
CN5301	1-691-346-11	CONNECTOR, FFC/FPC (ZIF) 8P				
CN5302	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P				
		< DIODE >				
D5301	8-719-043-70	DIODE MA6S121-(TX)				
D5302	8-719-056-49	DIODE 1SS370(TE85L)				

Ref. No.	Part No.	Description			Remark
		< IC >			
IC5301	8-759-097-75	IC MB3789PFV-G-BND			
		< COIL >			
L5301	1-412-031-11	INDUCTOR CHIP 47uH			
		< TRANSISTOR >			
Q5301	8-729-028-81	TRANSISTOR RN2305-TE85L			
Q5304	8-729-403-35	TRANSISTOR UN5113-TX			
Q5305	8-729-402-42	TRANSISTOR UN5213-TX			
		< RESISTOR >			
R5301	1-216-809-11	METAL CHIP	100	5%	1/16W
R5304	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R5305	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R5306	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5307	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5308	1-216-847-11	METAL CHIP	150K	5%	1/16W
R5309	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5310	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5311	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5312	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5313	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5314	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5315	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5316	1-216-851-11	METAL CHIP	330K	5%	1/16W
R5317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5318	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R5321	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5322	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5324	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-421-A VL-16 BOARD, COMPLETE (EXCEPT TR57)
****
(Ref. No. 3,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C151	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C153	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN151	1-766-619-11	1ONNECTOR, FFC/FPC 8P			
		< COIL >			
L151	1-416-344-11	INDUCTOR 0uH			
		< TRANSISTOR >			
Q151	8-729-043-94	TRANSISTOR CPH3106-PM-TL			
Q152	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			
		< RESISTOR >			
R151	1-216-864-11	METAL CHIP	0	5%	1/16W
R152	1-216-813-11	METAL CHIP	220	5%	1/16W
R153	1-216-821-11	METAL CHIP	1K	5%	1/16W
R154	1-216-845-11	METAL CHIP	100K	5%	1/16W

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
9	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
12	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500)	(TR57/TR67/TR413PK)
12	1-475-617-21	SWITCH BLOCK, CONTROL (FK-8500)	(TR87TR414PK)
12	1-475-617-71	SWITCH BLOCK, CONTROL (FK-8500)	(TR917/TR940/TR940PK)
151	1-475-620-11	SWITCH BLOCK, CONTROL(MF-8500)	(TR917/TR940/TR940PK)
157	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
204	1-668-962-11	FP-638 FLEXIBLE BOARD	
260	1-668-961-11	FP-632 FLEXIBLE BOARD (EXCEPT TR57)	
261	1-668-960-11	FP-629 FLEXIBLE BOARD	
262	1-668-956-11	FP-620 FLEXIBLE BOARD	(TR87/TR414PK/TR917/TR940/TR940PK)
263	1-668-957-11	FP-621 FLEXIBLE BOARD	
264	1-668-958-11	FP-622 FLEXIBLE BOARD	
308	1-668-959-11	FP-623 FLEXIBLE BOARD	
311	1-758-084-21	FILTER BLOCK, OPTICAL	(TR87/TR917/TR940/TR940PK)
311	1-758-133-21	FILTER BLOCK, OPTICAL	(TR57/TR67/TR413PK/TR414PK)
313	8-848-724-01	DEVICE, LENS, LSV-601A (SOC)	(TR57/TR67/TR87/TR413PK/TR414PK)
313	8-848-722-01	DEVICE, LENS LSV-600A(SOC)	(TR917/TR940/TR940PK)
351	8-848-722-01	DEVICE, LENS LSV-600A (SOC)	(TR917/TR940/TR940PK)
351	8-848-724-01	DEVICE, LENS LSV-601A (SOC)	(TR57/TR67/TR87/TR413PK/TR414PK)
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIODE GL453	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE)	(TR57/TR67/TR413PK)
IC401	A-7030-865-A	CCD BLOCK ASSY (209 SERVICE)	(TR87/TR414PK/TR917/TR940/TR940PK)
LCD901	A-7093-473-A	INDICATION LCD BLOCK ASSY	(TR57/TR67/TR87/TR413PK/TR414PK)
LCD901	A-7093-486-A	INDICATION LCD BLOCK ASSY	(TR917/TR940/TR940PK)
LCD902	8-753-023-36	LCX024AK-5 (TR413PK)	
LCD902	8-753-023-37	LCX024AK-4/5	(TR57/TR67/TR87/TR414PK/TR917/TR940/TR940PK)
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R) (3 HEAD)	(TR57/TR67/TR87/TR413PK/TR414PK)
M901	A-7048-842-A	DRUM ASSY (DGH-0E1A-R) (5 HEAD)	(TR917/TR940/TR940PK)
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MOCROPHONE (R-CH) (TR917/TR940/TR940PK)	
ND801	1-517-759-11	LIGHT, BACK (TR917/TR940/TR940PK)	

Ref. No.	Part No.	Description	Remark
⚠ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	
S003	1-572-688-11	SWITCH, PUSH (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW) (TR87/TR414PK/TR917/TR940/TR940PK)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH) (TR87/TR414PK/TR917/TR940/TR940PK)	
⚠VL901	1-517-760-11	LIGHT, VIDEO (EXCEPT TR57)	

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-467-574-21	REMOTE COMMANDER (RMT-708) (EXCEPT TR57)	
⚠	1-475-599-11	ADAPTOR, AC (AC-L10)	
⚠	1-569-008-11	ADAPTOR, CONVERSION 2P (TR413PK/TR414PK/TR940PK)	
	1-574-039-21	CORD, CONNECTION (A/V CONNECTING CABLE (Monaural) 1.5M) (TR57/TR67/TR87/TR413PK/TR414PK)	
⚠	1-575-131-11	CORD, POWER (TR413PK/TR414PK/TR940PK)	
	1-575-334-11	CORD, CONNECTION (A/V CONNECTING CABLE (Stereo) 1.5M) (TR917/TR940/TR940PK)	
⚠	1-775-549-21	CORD, POWER (TR57/TR67/TR87/TR917/TR940)	
	3-861-898-11	MANUAL, INSTRUCTION (ENGLISH) (TR57/TR67/TR87/TR917/TR940)	
	3-861-898-21	MANUAL, INSTRUCTION (FRENCH) (TR57/TR67 : CND/TR87 : CND/TR917 : CND/TR940 : CND)	
	3-861-898-31	MANUAL, INSTRUCTION (ENGLISH) (TR413PK/TR414PK/TR940PK)	
	3-861-898-41	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (TR413PK/TR414PK/TR940PK)	
	3-861-898-51	MANUAL, INSTRUCTION (KOREAN) (TR413PK/TR414PK/TR940PK)	
	3-947-969-21	BELT (S), SHOULDER	
	3-971-463-01	LABEL, FIRE CAUTION DISCERN (TR67/TR87/TR940)	
	A-7092-936-A	CASE (L) ASSY (U), BATTERY (TR67/TR87/TR940)	
**	NP-F330	BATTERY PACK	

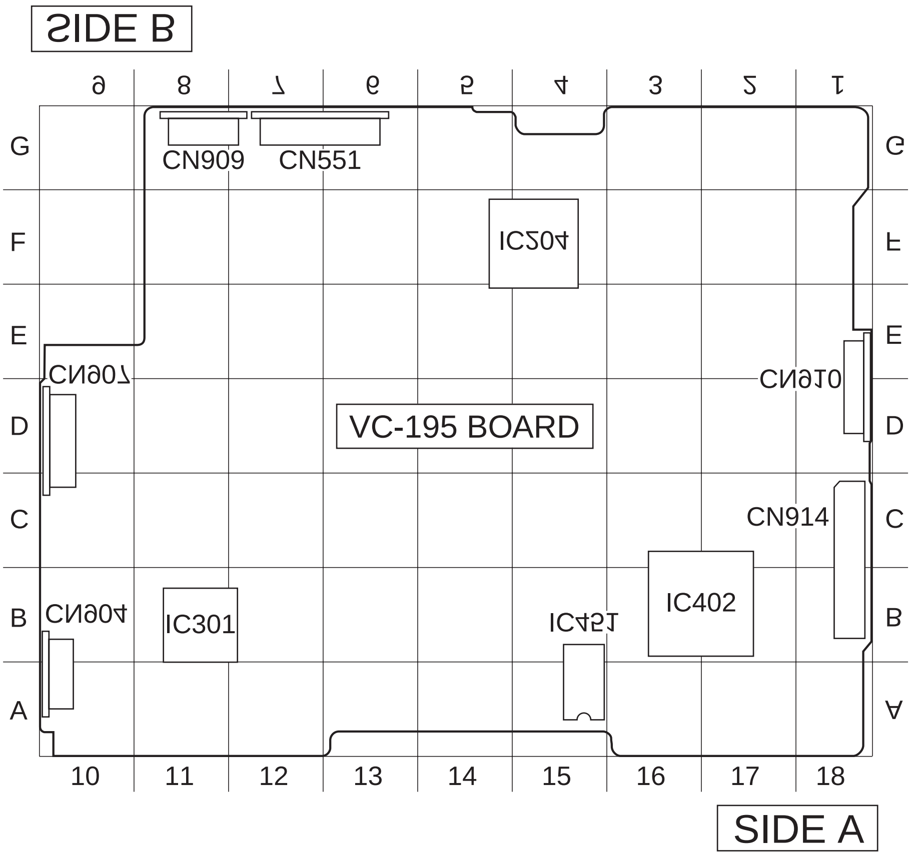
Note.
** MARKPARTSIS AVAILABLE AS AN OPTIONAL ACCESSORY

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

< PARTS REFERENCE SHEET >

You can find the parts position of mount locations applying to boards of a set.

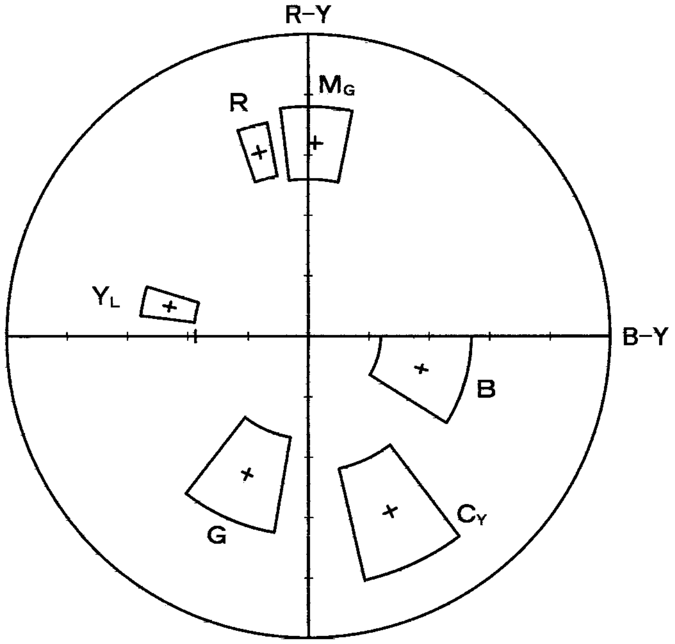
Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.



FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

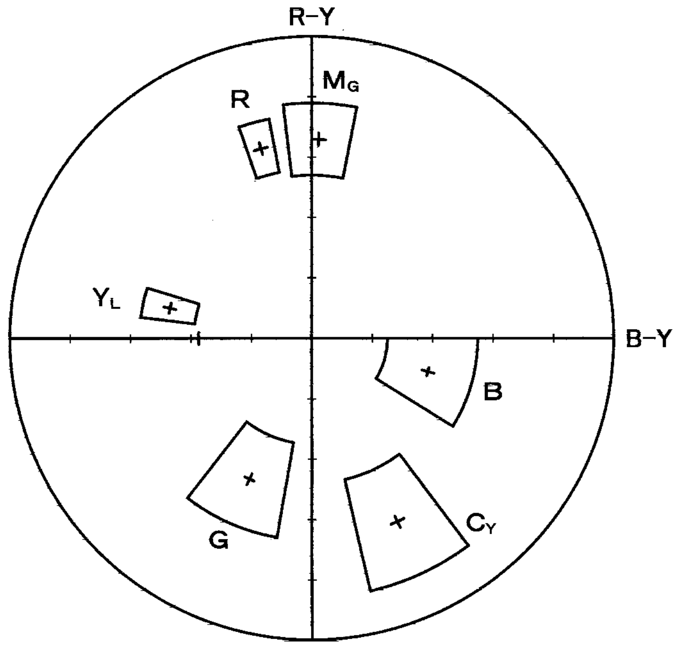
Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

For 510H model



CCD-TR57/TR67/TR413PK

For 760H model



CCD-TR87/TR414PK/TR917/TR940/TR940PK

9-974-035-11

Sony Corporation
Personal A&V Products Company

98A0929-1
Printed in Japan © 1998. 1
Published by Quality Engineering Dept.
(Osaki East)